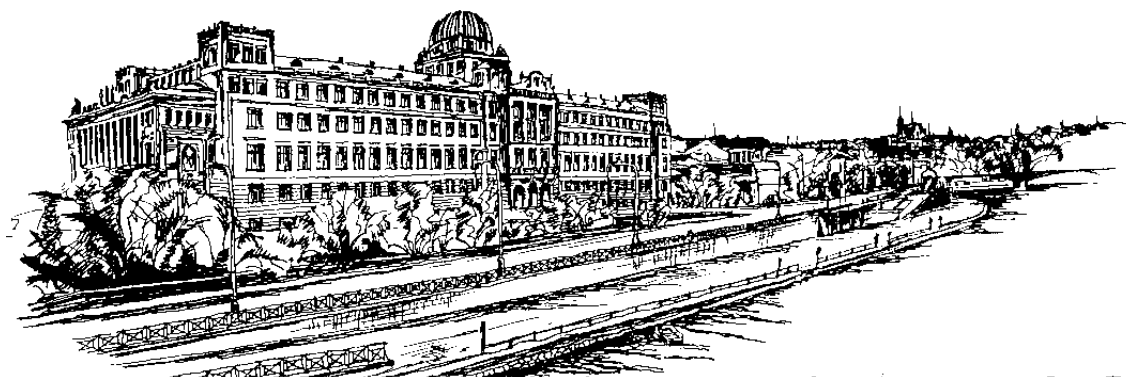


# STATE ENERGY POLICY OF THE CZECH REPUBLIC

*(approved by Government Decision No. 211 of March 10, 2004)*



MINISTRY OF INDUSTRY AND TRADE OF CZECH REPUBLIC

**Prague 2004**

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# INTRODUCTION

The State Energy Policy is one of the basic components of the economic policy of the Czech Republic. It is a reflection of the state's responsibility for creating conditions for reliable and permanently safe supplies of energy at acceptable prices and for creating conditions for its efficient use that will not threaten the environment and will comply with the principles of sustainable development. The state fulfils this legal responsibility by establishing the legislative framework and rules for the operation and development of energy sector.

The State Energy Policy's vision specifies the state's priorities and determines the objectives that the state wants to achieve in influencing the development of energy sector in the horizon of the next 30 years in the conditions of a market-oriented economy.

The State Energy Policy has been updated based on: analyses of the previous development and the current situation of the Czech Republic; an evaluation of the fulfilment of the targets of the 2000 energy policy; a view to foreign experience; European Union procedures and standards; obligations of the Czech Republic resulting from international treaties in the sphere of energy sector and environmental protection; and after the development and evaluation of a set of energy scenarios of possible future developments until 2030. The Policy specifies a more comprehensive set of priorities and long-term goals that the Czech Republic will observe in the energy sector as part of sustainable development. For their fulfilment suitable and efficient measures will be used.

During the selection of the State Energy Policy's priorities, objectives and set of tools, energy, environmental, economic and social viewpoints were respected.

The fulfilment of priorities and objectives of the State Energy Policy will be evaluated by the Ministry of Industry and Trade at three-year intervals. The Ministry will inform the Government of the results of these evaluations and submit proposals for changes to the State Energy Policy if necessary.

# 1. STATE ENERGY POLICY VISION

The State Energy Policy's vision defines the basic priorities creating the framework for the long-term development of the energy sector of the Czech Republic.

The basic priorities of the State Energy Policy are:

## MAXIMUM

INDEPENDENCE
Independence from foreign energy sources
Independence from energy sources from risky regions
Independence from reliability of supplies from foreign sources

SAFETY
Safety of energy sources including nuclear safety
Reliability of supplies of all kinds of energy
Reasonable decentralisation of all energy systems

SUSTAINABLE DEVELOPMENT
Environmental protection
Economic and social development

# 2. STATE ENERGY POLICY GOALS

The State Energy Policy's goals are directed at the fulfilment of its vision and they work out the basic priorities into a more specific form. Four main goals have been defined while each contains several partial objectives. The goals are arranged by their importance.

## 2.1. MAXIMISING ENERGY EFFICIENCY

This is the goal number one and helps to fulfil the priorities of independence and safety as well as sustainable development. The increase in energy efficiency will be expressed in summary form using indicators of utilisation of the consumption of primary energy sources (hereinafter PES), or consumption of electricity in the gross national product (GDP) creation.

Partial objectives arranged by their importance:

### 2.1.1. Maximising energy utilisation

**An objective with a very high priority** aimed at improving one of the Czech Republic's most serious problems – the high energy and electricity intensity of GDP creation. Such economic structure, technologies, production and processes will be supported that will utilise consumed energy to a maximum extent through value added (GDP).

### **2.1.2. Maximising efficiency in acquiring and converting energy sources**

**An objective with a very high priority** focusing on preferential treatment of energy sources and energy technologies that will be able to with high efficiency levels to acquire PES, carry out energy conversion, reduce transport losses and use combined electricity and heat generation. Secondary energy sources will be optimally utilised.

### **2.1.3. Maximising savings in heating**

**An objective with a high priority** directed at maximising savings in heating in buildings in the entrepreneurial, state, municipal and small consumer (household) spheres. This area has one of the highest potentials for energy savings that can be achieved at acceptable costs.

### **2.1.4. Maximising efficiency of electricity appliances**

**An objective with a medium-high priority** focusing on maximising savings of electricity and other forms of energy in all spheres through using energy efficient appliances. This area includes promotion of: use of energy-efficient electric appliances; use of energy-efficient engines and means of transport; technologically advanced sources of heat and other appliances.

### **2.1.5. Maximising efficiency of distribution systems**

**An objective with a medium-high priority** focusing on an efficient energy distribution system from the point of view of centralised and distributed energy sources, consumption priorities and system losses.

## **2.2. ENSURING THE EFFECTIVE AMOUNT AND STRUCTURE OF PRIMARY ENERGY SOURCES CONSUMPTION**

This is goal number two that helps to fulfil the priorities of independence, safety and sustainable development within a sufficiently diversified and permanently stable structure of PES and electricity generation.

Partial objectives arranged by importance:

### **2.2.1. Promotion of electricity and heat produced from renewable energy sources**

**An objective with a very high priority** focusing on preferring renewable energy sources. The state will promote utilisation of all energy sources that can be reproduced in the long-term and the use of which will contribute to the reinforcement of state independence from foreign energy sources and to environmental protection. All types of renewable sources will be supported – sources using solar, wind and water energy, geothermal energy and biomass for producing electricity and heat. The

utilisation of secondary energy sources and alternative fuels in transport will also be promoted.

### **2.2.2. Optimising the use of indigenous energy sources**

**An objective with a very high priority** focusing on achieving maximum independence for the Czech Republic from foreign energy sources. The state will prefer the optimal utilisation of all exploitable reserves of brown and black coal and other fuels that are found in its territory while complying with all the principles of environmental protection. The fulfilment of this objective will also help solve the state's economic and social problems.

### **2.2.3. Optimising nuclear energy use**

**An objective with a high priority** aimed at optimising the share of nuclear energy within a safe long-term energy mix while respecting the essential operational safety requirements. The fulfilment of this objective will help to reduce the environmental load within the Czech Republic, including a reduction of greenhouse gas emissions. Nuclear energy will also support the priority of maximum independence of the country from foreign energy sources. Fuel for nuclear power stations can be acquired at markets in politically stable regions and stocks can be created and maintained for a very long period.

## **2.3. MAXIMISING ENVIRONMENTAL FRIENDLINESS**

This is goal number three, which fulfils the priorities of safety and sustainable development. Maximum environmental friendliness will be based on an efficient structure of PES consumption that will be environmentally friendly and on the advanced methods of electricity and heat generation. The partial objectives will focus on reducing the impacts of energy processes on the environment.

Partial objectives arranged by importance:

### **2.3.1. Minimising environmentally harmful emissions**

**An objective with a high priority** aimed at enforcement of the best available environmentally friendly techniques ensuring a permanent reduction of emissions both of solid but mainly liquid and gas pollutants.

### **2.3.2. Minimising greenhouse gases emission**

**An objective with a medium-high priority** focusing on minimising emissions of greenhouse gases, especially carbon dioxide, in compliance with the Czech Republic's international obligations mainly from the Kyoto Protocol.

### **2.3.3. Minimising the environmental burden on future generations**

**An objective with a medium-high priority** aimed at the utilisation of technologies that do not generate a permanent damage to any part of the environment. The state will support technologies used for exploitation or conversion

of energy that minimise the production of wastes that cannot be degraded or recycled, as such wastes represent a burden for future generations. The state will also support safe and long-term storage of such waste that cannot be recycled or disposed of in any other way.

#### **2.3.4. Minimising the environmental burdens of previous years**

**An objective with a medium-high priority** directed at the gradual removal of substances that are less degradable and which got into the environment mostly as a result of previous burning specific materials to produce heat or another energy (the objective is based on the Stockholm Convention – Agreement on Persistent Organic Pollutants) and from the operation of nuclear technologies.

### **2.4. COMPLETING THE TRANSFORMATION AND LIBERALISATION OF ENERGY SECTOR**

This is goal number four, which fulfils the priorities of safety and sustainable development, a requirement for ensuring full adaptation of the Czech Republic to the market model of energy sector pursued within the EU, as well as economic and social requirements.

Partial objectives arranged by importance:

#### **2.4.1. Completing transformation measures**

**An objective with a high priority** of a short-term character, striving for full adaptation to the market-oriented model of energy sector pursued in the EU, including application of newly formulated legislative and technical requirements and rules while excluding decisions that endanger the reliable functioning of energy sector.

#### **2.4.2. Minimising the prices of all types of energy**

**An objective with a high priority** aimed at creating a highly competitive environment in the generation and distribution of all kinds of energy, which will lead to setting and maintaining low prices in the medium-term and long-term horizons. Measures aimed at the minimising fuel and energy price growth are more important in the Czech Republic as the share of fuel and energy costs in total household expenditure is higher than in EU countries.

#### **2.4.3. Optimising backing-up of energy sources**

**An objective with a high priority** striving for the creation of a regulatory and business environment that will create conditions allowing operative selection of energy suppliers, which will lead to lower dependence on a particular supplier or one group of enterprises. In the long-term this strategy should lead to the creation of such energy transportation methods that will allow operational changes of supplier for example in cases of supply failures and to prevent and resolve the results of states of emergency while complying with the continuing increases in reliability requirements for individual sources.

## 3. STATE ENERGY POLICY MEASURES

### 3.1. MAXIMISING ENERGY EFFICIENCY

The efficient use of energy sources throughout the cycle - from acquisition, transport, storage and conversion to final use - is a permanent priority for the State Energy Policy, because a high level of energy efficiency is characteristic for efficient and modern economies and is a condition for sustainable development.

Energy efficiency must be improved throughout a wide range of energy uses and energy conversion methods through the activities of enterprises, the public sector and the population as a whole with well targeted state support. Overall, the result of increased energy efficiency, connecting the consumption of energy with its valuation, will be a fall in the energy and electricity intensity of GDP creation.

Increasing energy efficiency is the cheapest, safest and fastest way to achieve all the priorities and goals of the State Energy Policy. It ensures reduced energy intensity, emissions of pollutants and the risks of growth in energy import dependence; it prolongs the life of indigenous resources of non-renewable energy sources, increases the competitiveness of the energy sector and the whole Czech economy and it positively influences all other energy sector parameters.

#### 3.1.1. Current situation regarding the pursued goal

With respect to its current GDP level the Czech Republic still consumes more primary energy sources and electricity than objectively necessary (the consumed energy creates little value added). **In spite of achieved improvements the energy and electricity intensity of GDP creation in the Czech Republic are nearly double those of EU countries.** It is mainly transport, industry and the building industry that show high energy intensity.

When fulfilling the goals of previous energy policies the Czech Republic introduced, in accordance with EU practices, standard systematic measures supporting the growth of energy efficiency (rectification of energy prices, measures stimulating energy efficiency) and declared a National Programme for Economical Energy Management and Use of Renewable and Secondary Energy Sources.

**This is why the current requirement consists of strengthening the efficiency of the existing system, of more thorough and systematic incentives for the growth of energy efficiency and of establishing an energy market.**

#### 3.1.2. Currently valid measures regarding the pursued goal

- 3.1.2.1. Act No. 458/2000 Coll. (the Energy Act),
- 3.1.2.2. Act No. 406/2000 Coll. on Energy Management,
- 3.1.2.3. The National Programme for Economical Energy Management and Use of Renewable and Secondary Energy Sources,



- 3.1.2.4. Evaluation of the fulfilment of State Energy Policy goals,
- 3.1.2.5. Legislation promoting the production of electricity and heat from renewable energy sources and the cogeneration of electricity and heat (Decree of the Ministry of Industry and Trade No. 539/2002, Price decisions of the Energy Regulatory Office).

### 3.1.3. Target state regarding the pursued goal

<b>Long-term targets</b>	<p><b>1. Acceleration and subsequent stabilisation of the annual rate of fall of the energy intensity of GDP creation by 3.0 – 3.5% (indicative target)</b></p> <p><b>2. Avoiding an increase in the absolute value of consumption of primary energy sources. Economic growth should be mainly supported by increased energy efficiency</b></p> <p><b>3. Acceleration and subsequent stabilisation of the annual rate of fall of the electricity intensity of GDP creation by 1.4 – 2.4% (indicative target)</b></p>
<b>Targets to be achieved by 2005 (indicative targets)</b>	<p><b>1. Stabilisation of the annual rate of fall of total energy intensity at a minimum of 2.6%</b></p> <p><b>2. Stabilisation of the annual rate of fall of total electricity intensity at a minimum of 2%</b></p>

### 3.1.4. Newly proposed measures regarding the pursued goal

- 3.1.4.1. Amendments to Acts No. 458/2000 Coll. and 406/2000 Coll.
- Accelerating the liberalisation of the electricity and gas markets and harmonising the market rules for these forms of energy with EU rules, including conditions for the cross-border exchanges in electricity,
  - Applying the provisions of EU Directive No. 2002/91/EC on the energy performance of buildings and thus initiating improvements in their energy consumption parameters and reductions in their energy demands.
- 3.1.4.2. The Act on promotion of electricity and heat produced from renewable energy sources
- Reconciling the promotion for producing electricity from renewable sources in accordance with the EU Directive No. 2001/77/EC to create conditions for the fulfilment of the indicative target of the share of electricity production from renewable sources in the gross consumption of electricity of 8% by 2010,
  - Widening the competence of the Energy Regulatory Office in this sphere.

- 3.1.4.3. The National Programme for Economical Energy Management and Use of Renewable and Secondary Energy Sources for 2006 - 2009
- Increasing the funding of the National Programme,
  - Supporting stabilisation and long-term validity of measures stimulating energy efficiency,
  - Using the possibilities provided by the EU within the 6<sup>th</sup> Action Programme in the Energy Sector and the Programme resulting from the Decision of the EP and Council No. 1230/2003/EC ("Intelligent Energy – Europe") to support the National Programme.
- 3.1.4.4. Promotion the cogeneration of electricity and heat
- Maintaining the existing forms of support and harmonising Czech legislation with Directive No. 2004/8/EC.
- 3.1.4.5. Investment incentives (in accordance with Act No. 72/2000 Coll. on investment incentives and its amendment No. 453/2001 Coll.)
- The provision of investment incentives should take more account on SEP priorities,
  - Striving for expanded application of the Act to projects supporting SEP priorities.
- 3.1.4.6. A long-term outlook for energy sector until 2030
- Development and publishing the long-term energy outlook and following its indicative targets while influencing the development of energy sector.
- 3.1.4.7. An indicative programme for renewing and replacing outdated electricity generating plants with sources that are more efficient and are more environmentally friendly
- Development and publishing the indicative programme for renewing and replacing outdated electricity generating plants (by 2030) and fulfilling its targets while influencing the development of the energy system.
- 3.1.4.8. Research and development support programmes, including the National Research Programme
- Widening the competence of the Czech Energy Agency and ensuring closer links between the state research and development promotion policies and the SEP priorities (efficient use of energy sources, renewable energy sources, cogeneration),
  - Using the possibilities provided by the EU within the 6<sup>th</sup> Action Programme in the Energy Sector and the Programme resulting from the Decision of the EP and Council No. 1230/2003/EC ("Intelligent Energy – Europe") to support research and development.
- 3.1.4.9. Incorporating environmental rules in the tax system
- Harmonising the tax system of the Czech Republic with Directive No. 2003/96/EC on framework for taxation of energy products and electricity.

More detailed specifications of the newly proposed SEP measures are found in the Summary of the current and newly applied State Energy Policy measures.

## 3.2. ENSURING THE EFFECTIVE AMOUNT AND STRUCTURE OF PRIMARY ENERGY SOURCES CONSUMPTION

The whole EU is solving reliability and long-term safety issues relating to energy supplies as a new priority. The original content of safety and reliability is getting a new dimension in measures aimed at strengthening national energy self-sufficiency, and away from increases in dependence on energy imports from risky territories, which is connected to possible supply failures, transport breakdowns and fluctuations in the prices of energy sources, etc. The priority is expressed in requirements for a reliable and permanently stable energy mix and ways of generating electricity and heat.

This priority is also aimed at increasing the energy system's robustness and ability to operate in states of emergency (emergency management), in cases of energy supply failures and large-scale disasters (floods, major breakdowns, terrorist attacks, etc.).

### 3.2.1. Current state regarding the pursued goal

The Czech Republic has significantly diversified its PES consumption structure. The stability of foreign energy supplies has also been reinforced by increasing the territorial diversification of suppliers of imported liquid and gas fuels.

The overall extent of the Czech Republic's dependence on energy imports is quite favourable for the time being (approx. 32% of energy consumption), yet its structure is unbalanced. The dependence on imports of oil, natural gas and nuclear fuel is virtually 100%. Energy commodities represent approx. 9% of total Czech imports at the present, with a trade balance deficit in energy commodities of CZK 70-80 billion.

Diversification of the structure of PES consumption will continue to increase, but the dependence on energy imports will grow dynamically in spite of promotion for the utilisation of indigenous and renewable energy sources.

The growth rate of the dependence on energy imports must be reduced by a series of direct and indirect measures, mainly increasing energy efficiency, promoting renewable energy sources and increasing **availability and prolonging the life of the indigenous solid fuel resources, mainly brown coal** (in the event of the construction of new efficient coal power stations, resources of brown coal must be released in sufficient amounts for at least 40 years of operations).

The Czech Republic, in accordance with Act No. 189/1999 Coll. on emergency oil reserves, **creates and maintains strategic supplies of oil to cover needs for up to 90 days**. On the basis of EU accession negotiations a transition period has been agreed on and the emergency storage capacities will be replenished by the end of 2005.

Energy sector functioning **in states of emergency** is addressed by Act No. 458/2000 Coll. (the Energy Act) using the declaration of states of emergency.

Emergency management is further addressed by Acts No. 240/2000 Coll. (the Emergency Act) and No. 241/2000 Coll. on emergency measures.

### 3.2.2. Currently valid measures regarding the pursued goal

- 3.2.2.1. Act No. 458/2000 Coll. (the Energy Act),
- 3.2.2.2. Act No. 406/2000 Coll. on energy management,
- 3.2.2.3. Evaluation of the fulfilment of State Energy Policy goals,
- 3.2.2.4. Legislation promoting the production of electricity and heat from renewable sources and the cogeneration of electricity and heat (Decree of the Ministry of Industry and Trade No. 539/2002, Price decisions of the Energy Regulatory Office),
- 3.2.2.5. Using the competencies of the Ministry of Industry and Trade in the sphere of import regulation of electricity and gas pursuant to Act No. 458/2000 Coll.,
- 3.2.2.6. Authorisation for the construction of electricity and heat generating plants in accordance with Act No. 458/2000 Coll.,
- 3.2.2.7. Act No. 189/1999 Coll. on emergency oil reserves,
- 3.2.2.8. Act No. 240/2000 Coll. on crisis management,
- 3.2.2.9. Act No. 241/2000 Coll. on emergency measures.

### 3.2.3. Target state regarding the pursued goal

<p><b>Long term targets</b></p>	<p><b>1. Achieving the following primary energy consumption structure by 2030:</b></p> <ul style="list-style-type: none"> <li>• <b>solid fuel:</b> 30 - 32 %</li> <li>• <b>gas fuel:</b> 20 - 22 %</li> <li>• <b>liquid fuel:</b> 11 - 12 %</li> <li>• <b>nuclear fuel:</b> 20 - 22%</li> <li>• <b>renewable sources:</b> 15 - 16%</li> </ul> <p><b>2. Maintaining limits for dependence on energy imports (indicative targets):</b></p> <ul style="list-style-type: none"> <li>• <b>in 2010 max.:</b> 45%</li> <li>• <b>in 2020 max.:</b> 50%</li> <li>• <b>in 2030 max.:</b> 60%</li> </ul> <p><b>3. Creating and maintaining minimum storage capacities of oil and oil products (in accordance with Act No. 189/1999 Coll. on emergency oil reserves and solution to the states of emergency need for oil) and increasing them possibly to the level agreed within the EU</b></p> <p><b>4. Legislative preparation for increasing the minimum storage capacities of oil in the way agreed within the EU</b></p> <p><b>5. Providing for the legislative framework for a new kind of strategic reserve for natural gas and maintaining it as agreed within the EU</b></p>
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	<p><b>6. In connection with the previous targets, creating and maintaining storage capacities of nuclear fuel in a suitable form for loading it into a reactor as a strategic reserve</b></p> <p><b>7. Reinforcing the reliability of the national energy systems</b></p> <p><b>8. Updating general emergency management measures</b></p>
<b>Targets to be achieved by 2005</b>	<p><b>1. Achieving the following structure of primary energy sources by 2005:</b></p> <ul style="list-style-type: none"> <li>• <b>solid fuel: 42 - 44 %</b></li> <li>• <b>gas fuel: 20 - 22 %</b></li> <li>• <b>liquid fuel: 15 - 16 %</b></li> <li>• <b>nuclear fuel: 16 - 17 %</b></li> <li>• <b>renewable sources: 5 - 6 %</b></li> </ul> <p><b>2. Maintaining a limit of 42% import dependence (indicative target)</b></p> <p><b>3. Replenishment the storage capacities of oil and oil products to cover the needs of 90 days' consumption</b></p>

### **3.2.4. Newly proposed measures regarding the pursued goal**

#### **3.2.4.1. Amendments of Acts No. 458/2000 Coll. and No. 406/2000 Coll.**

- Defining public interest in the energy sector, including the support for long-term planning in the energy sector and the ways of respecting its outputs,
- Prolonging the length of the energy outlook to 30 years.

#### **3.2.4.2. A long-term energy outlook up to 2030**

- Elaborating, publishing and respecting the long-term outlook of energy sector up to 2030,
- Verifying the operability of the national energy systems in the long-term horizon.

#### **3.2.4.3. An indicative programme for renewing and replacing outdated electricity generating plants with sources that are more efficient and are more environmentally friendly**

- Elaborating and publishing the indicative programme for renewing and replacing outdated electricity generating plants (by 2030).

#### **3.2.4.4. Reasonable revisions of government decisions relating to regional environmental limits for brown coal mining**

- The decision-making process on regional limits for brown coal mining should be transferred to regional self-administration bodies in accordance with valid legislation.

- 3.2.4.5. The Act on promotion of electricity and heat produced from renewable sources
- Establishing a comprehensive legislative measure to create conditions for the fulfilment of the national indicative target of electricity produced from renewable energy sources,
  - Elaborating and publishing a long-term indicative programme for using renewable energy sources in the Czech Republic.
- 3.2.4.6. Promotion of cogeneration of electricity and heat
- Increasing the promotion for cogeneration of electricity and heat and harmonising this promotion with Directive No. 2004/8/EC.
- 3.2.4.7. Promotion of the use of alternative fuels in transport
- Increasing the promotion for using biofuels and alternative fuels in transport in accordance with Directive No. 2003/30/EC and the Amendment to the Air Protection Act No. 86/2002 Coll.
- 3.2.4.8. Investment incentives (in accordance with Act No. 72/2000 and its amendment No. 453/2001 Coll.)
- The provision of investment incentives should consider SEP priorities to a greater extent,
  - Striving for extended application of the Act to projects supporting the SEP priorities.
- 3.2.4.9. Authorisation procedure for the construction of new generation capacities
- Harmonizing legislation for the authorization of the construction of new capacities (electricity, heat) with the EU Directive, including the use of the Indicative Programme for replacement of outdated power electricity generating plants.
- 3.2.4.10. Storage capacities of oil and natural gas by December 31, 2005
- Fulfilling the requirements of Act No. 189/1999 Coll. (oil, oil products).
- 3.2.4.11. An amendment to Act No. 189/1999 Coll. on emergency oil reserves or possibly the preparation and adoption of new Acts on emergency reserves of natural gas, black coal and nuclear fuel,
- When consent on the methods of strengthening strategic reserves within the EU (oil) and on the way of maintaining other strategic reserves (natural gas, black coal and nuclear fuel) has been achieved in the EU, the Czech legislation should be harmonised.
- 3.2.4.12 Energy management in states of emergency.
- Ensuring increased reliability and improved functioning of energy sector through the amendment to the emergency legislation.
- 3.2.4.13. Research and development support programmes, including the National Research Programme.
- Widening the competence of the Czech Energy Agency and ensuring closer links between the state research and development support policies and the SEP priorities (efficient use of energy sources, renewable energy sources and cogeneration),

- Using the possibilities provided by the EU within the 6<sup>th</sup> Action Programme in the Power Sector and the Programme resulting from the Decision of the EP and Council No. 1230/2003/EC (“Intelligent Energy – Europe”) to support research and development.

#### 3.2.4.14. Measures against the risks of growing dependence on energy imports.

- Analysing the development of energy import dependence,
- Measures for maintaining its indicative limit level specified in long-term energy plans (the long-term outlook and indicative programme), the authorisation for construction of new generating capacities.

#### 3.2.4.15. Wider incorporation of environmental principles in the tax system

- Harmonising the tax system of the Czech Republic with Directive No. 2003/96/EC on the framework for taxation of energy products and electricity.

More detailed specifications of the newly proposed SEP measures are found in the Summary of the current and newly applied State Energy Policy measures.

### **3.3. ENSURING MAXIMUM ENVIRONMENTAL FRIENDLINESS**

Protection of the environment is the basic standpoint used for the evaluation of all economic activities in all advanced countries, especially in the EU. The existence of worldwide climate changes cannot be denied and the adopted measures to prevent their worsening, which only have the character of medium-term programmes and obligations for the time being, will be deepened.

The measures aimed at lowering the environmental burden include:

- Maintaining specific emission limits for SO<sub>2</sub>, NO<sub>x</sub> and VOC, determined for the Czech Republic until 2010 (in accordance with Government Regulation No. 351 of July 3, 2002),
- Using renewable energy sources (their promotion is required by Directive No. 2001/77/EC on promotion of electricity produced from renewable energy sources) and the Czech Republic is also specifying its indicative target in this sphere,
- Fulfilling obligations to reduce the production of organic substances that do not degrade easily,
- Fulfilling international obligations to lower emissions of greenhouse gases (after ratification of the Kyoto Protocol).

#### **3.3.1. Current state regarding the pursued goal**

Thanks to the widespread and high levels of investment in the operated energy facilities, the burdening of the environment has dropped considerably. At the present time the Czech Republic has no difficulties in maintaining its limits of emission volumes of SO<sub>2</sub> and NO<sub>x</sub> until 2010. What remains a problem is the VOC emission limit and specific emissions of CO<sub>2</sub> and NO<sub>x</sub>, (per inhabitant or per GDP), which are still at a higher level than in EU countries.

### 3.3.2. Currently valid measures regarding the pursued goal

- 3.3.2.1. Act No. 458/2000 Coll., (the Energy Act),
- 3.3.2.2. Act No. 406/2000 Coll. on Energy Management,
- 3.3.2.3. The National Programme for Economical Energy Management and Use of Renewable and Secondary Energy Sources,
- 3.3.2.4. Evaluation of the fulfilment of State Energy Policy goals,
- 3.3.2.5. Legislation of the promotion electricity and heat produced from renewable sources and cogeneration of electricity and heat (Decree of the Ministry of Industry and Trade No. 539/2002, Price decisions of the Energy Regulatory Office).
- 3.3.2.6. The Air Protection Act No. 86/2002 Coll.,
- 3.3.2.7. The Integrated Prevention Act No. 76/2002 Coll.,
- 3.3.2.8. Government Regulation No. 350/2002 Coll. setting forth the emission limits and conditions and the way of monitoring, evaluating and controlling the air quality,
- 3.3.2.9. Government Regulation No. 351/2002 setting forth binding emission limits for some air pollutants and the preparation methods of emission audits,
- 3.3.2.10. Government Regulation No. 352/2002 Coll. setting forth the emission limits and other conditions for operating stationary combustion sources of air pollution,

and other valid measures.

### 3.3.3. Required conditions regarding the pursued goal

**Model calculations and energy scenarios prove that the conditions are fully feasible:**

- a) The required emission limits of SO<sub>2</sub>, NO<sub>x</sub> and VOC in accordance with Government directive No. 351 of July 3, 2002 as well as obligations that will result for the emissions of CO<sub>2</sub> in the Czech Republic after ratification of the Kyoto Protocol,
- b) Implementation of the EU Strategy on promotion of the utilisation of renewable energy sources.

In compliance with the general indicative EU targets for 22% of EU electricity consumed to be from renewable energy sources by 2010 and with a view to performed calculations **the current share of renewable energy sources in the current consumption of primary energy sources and in electricity generation can be more than doubled in the Czech Republic if the required support is provided.**

<b><i>Long-term targets</i></b>	<b><i>1. Complying with binding EU emissions limits in 2010 (SO<sub>2</sub> 265,000 tonnes, NO<sub>x</sub> 286,000 tonnes, VOC 220,000 tonnes)</i></b>  <b><i>2. Fulfilment of international obligations of the Kyoto Protocol (after its ratification) and of other agreements connected with it</i></b>
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	<p><b>3. Creating conditions for a wider utilisation of renewable energy sources – by determining and observing the national indicative target of the share of electricity generated from renewable sources in gross national electricity consumption (8% in 2010)</b></p> <p><b>4. Creating conditions for a gradual increasing of the share of renewable energy sources in the domestic consumption of primary energy sources to up to 15 - 16% in 2030</b></p> <p><b>5. Creating conditions for wider utilisation of secondary energy sources and increasing the share of alternative fuels in transport</b></p> <p><b>6. Making preparations for and use the greenhouse gas emission trading schemes (in connection with the EU Directive) to ensure the goals of the State Energy Policy)</b></p>
<b>Targets to be achieved by 2005</b>	<p><b>1. Full transposition of EU environmental regulations into Czech legislation concerning energy sector</b></p> <p><b>2. Providing conditions for the fulfilment of the national target for renewable energy sources – the share of electricity produced from renewable energy sources in gross electricity consumption of 5 – 6% (indicative target)</b></p>

### **3.3.4. Newly proposed measures regarding the pursued goal**

#### **3.3.4.1. Amendments of Acts No. 458/2000 Coll. and No. 406/2000 Coll.**

- Ensuring legislative support for producing electricity and heat from renewable sources.

#### **3.3.4.2. The National Programme for Economical Energy Management and Use of Renewable and Secondary Energy Sources for 2006 – 2009.**

- Increasing the funding of the National Programme,
- Supporting the stabilisation and long-term validity of measures promoting energy savings and the use of renewable sources.

#### **3.3.4.3. The Act on promotion of electricity and heat produced from renewable energy sources**

- Creating a comprehensive legislative measure to ensure conditions for the fulfilment of the indicative target of producing electricity from renewable sources,
- Elaborating and publishing a long-term indicative programme for using renewable energy sources in the Czech Republic.

- 3.3.4.4. Promotion for utilisation of cogeneration of electricity and heat
- Increasing the promotion for cogeneration of electricity and heat and harmonising this promotion with Directive No. 2004/8/EC.
- 3.3.4.5. Higher use of alternative fuels in transport.
- Increasing the promotion for using biofuels and alternative fuels in transport in accordance with Directive No. 2003/30/EC and the amendment to the Air Protection Act No. 86/2002 Coll.
- 3.3.4.6. Investment incentives (in accordance with Act No. 72/2000 and its amendment No. 453/2001 Coll.)
- The provision of investment incentives should consider SEP priorities to a greater extent,
  - Striving for an expansion of the application of the Act to projects supporting the SEP priorities.
- 3.3.4.7. An indicative programme for renewing and replacing outdated electricity generating plants with sources that are more efficient and are more environmentally friendly
- Elaborating and publishing the indicative programme for renewing and replacing outdated electricity generating plants (by 2030).
- 3.3.4.8. Research and development support programmes, including the National Research Programme
- Widening the competence of the Czech Energy Agency and ensuring closer links between the state research and development support policies and the SEP priorities (efficient use of energy sources, renewable energy sources, cogeneration),
  - Using the possibilities provided by the EU within the 6<sup>th</sup> Action Programme in the Power Sector and the Programme resulting from the Decision of the EP and Council No. 1230/2003/EC ("Intelligent Energy – Europe") to support research and development.
- 3.3.4.9. Wider incorporation of environmental principles in the tax system
- Harmonising the tax system of the Czech Republic with Directive No. 2003/96/EC on the framework for taxation of energy products and electricity.
- 3.3.4.10. An integrated system for the reduction of pollution of components of the environment.
- Pursuing the application of the integrated prevention system, which is already harmonised with the EU.
- 3.3.4.11. Greenhouse gas emission allowance trading
- Harmonising the principles of Directive No. 2003/87/EC on scheme for greenhouse gas allowance trading with Czech legislation.

More detailed specifications of the newly proposed SEP measures are found in the Summary of the current and newly applied State Energy Policy measures.

### **3.4. COMPLETION OF ENERGY SECTOR TRANSFORMATION AND LIBERALISATION**

The process of transformation of Czech Republic energy sector proceeded throughout the 1990s and was the main priority for all state energy policies so far. The transformation of energy sector has advanced considerably and what is decisive for its further focus is that the adaptation process should be completed in principle by the date of the Czech Republic's accession to the EU (in May 2004) so that the Czech Republic can be prepared for the competitive environment in the EU. The process must be regulated in such a way as to be acceptable from the point of view of the social impacts on the employees in the energy sector and on the population.

#### **3.4.1. Current conditions regarding the pursued goal**

The Energy Policy (2000) contained and provided for the execution of a series of short-term tasks and requirements aimed at the completion of energy sector economic transformation (a privatisation programme, a gradual programme of electricity and natural gas markets liberalisation, completing the process of rectification and deregulation of electricity, natural gas and heat prices) and other steps aimed at the gradual harmonisation of Czech legislation with EU standards.

Among other things the measures taken have resulted in a considerable fall in employment in the energy sectors. The original figure of approx. 150 thousand employees (in 1990) dropped in 2002 to 61 thousand employees (with the largest drop being in the coal sector, from 106 thousand to approx. 35 thousand, while this decrease was partly caused by the transfer of supporting activities to other sectors. The rectification of energy prices continued throughout the 1990s. Price modifications that increased the energy expenses of households were controlled and spread out. The initial growth in prices was lower than inflation, while a more considerable growth in prices, especially for electricity and natural gas, occurred in 1999 – 2002 in accordance with the intention to finalise the removal of cross subsidies by 2002 (pursuant to Czech Government Decision No. 1250/99). The rate of increase in energy prices was higher for households in the Czech Republic than the growth rate of prices of other kinds of goods and services. An average household's expenditure for electricity, heat, gas and other fuel in the Czech Republic in 2002 represented 11% of its total expenditure, approx. 3x higher than in more advanced EU countries (France and Germany). The current energy prices can be considered as stabilised, but new reasons for price increases have appeared (environmental taxes, the shift of heat and biofuel from the lower to the higher VAT category and promotion for using renewable energy sources for the generation of electricity and heat).

#### **3.4.2. Currently valid measures regarding the pursued goal**

- 3.4.2.1. Act No. 458/2000 Coll. (the Energy Act),
- 3.4.2.2. Evaluation of the fulfilment of State Energy Policy goals,
- 3.4.2.3. Damping programmes for coal, ore and uranium mining.

### 3.4.3. Required conditions regarding the pursued goal

<b>Long-term targets</b>	<b><i>Continuous adaptation of energy sector system to the model used within the EU</i></b>
<b>Targets to be achieved by 2005</b>	<b><i>1. Creating a new liberalisation strategy for the electricity and natural gas market in accordance with amended EU Directives</i></b> <b><i>2. Evaluating the efficiency of regulation and tuning the regulation framework</i></b> <b><i>3. Specifying social measures in connection with the reduction of employment in the coal and electricity sub-sectors</i></b> <b><i>4. Permanently monitoring the impacts of energy prices on the population and influencing long-term price/tariff relations using sector regulation</i></b>

### 3.4.4. Newly proposed measures regarding the pursued goal

#### 3.4.4.1. Specification of the strategy for the liberalisation of electricity and natural gas market

- Specifying the material and time schedule for the liberalisation of the electricity and natural gas market, harmonising energy markets rules with Directives No. 2003/54/EC and 2003/55/EC (on common rules for the internal market with electricity and natural gas) and Commission Directive No. 1228/2003/EC (on the conditions for access to the network for cross-border exchanges in electricity).

#### 3.4.4.2. Access to the network for cross-border exchange in electricity

- Specifying conditions for cross-border exchanges in electricity in accordance with Commission Directive No. 1228/2003/EC on the conditions for access to the network for cross-border exchanges in electricity.

#### 3.4.4.3. Public interest in the energy sector, including long-term planning

- Defining the public interest in energy legislation, including long-term planning, in accordance with Directives No. 2003/54/EC and 2003/55/EC.

#### 3.4.4.4. Protection of end customers

- Adapting the methods for end customer protection to the provisions of Directives No. 2003/54/EC and 2003/55/EC (including the definition of universal service in the electricity and gas sub/sectors and specifications of its contents, the information obligations of energy suppliers towards end customers and other measures).

#### 3.4.4.5. Energy management in states of emergency

- Ensuring increased energy sector robustness and ability to operate in states of emergency by means of legislative amendments.

#### 3.4.4.6. Keeping consumers informed about long-term tendencies in the relative prices of energy commodities

- Development information about long-term tendencies in the relative prices of energy commodities within the competence of the Energy Regulation Office.

#### 3.4.4.7. Establishing a supplier of last resort that is obliged to supply electricity or gas for prices determined by the Energy Regulation Office to households and small customers who have not arranged for supplies from another supplier.

#### 3.4.4.8. Dumping programmes for coal, ore and uranium mining

- Delimiting the scope of the dumping programmes for coal and uranium mining in the long-term energy overview,
- Fulfilling the requirements of Government Decision No. 395/2003 concerning the proposal for participation by the state in the finalisation of coal sector restructuring.

#### 3.4.4.9. Evaluation, analytic activities

- Standardising the scope, contents and mutual relations of energy analyses (fulfilment of SEP indicative targets, securing energy needs, impacts of energy sector on the environment and the social sphere, analyses of household expenses, energy import dependency and others).

#### 3.4.4.10. Energy sector statistics

- Harmonising the statistics, collecting and processing data and information on energy sector with the Decision of the EP and Council No. 2367/2002/EC on the Statistical Programme of the Community for 2003-2007 and adapting it to the need to evaluate the fulfilment of the national indicator of the share of generation of electricity from renewable sources in the total gross electricity consumption.

#### 3.4.4.11. Media and other measures

- Educational and promotional programs focusing on the goals and results of SEP implementation,
- Standardising the system of publishing comprehensive information about the energy sector (statistics, analyses, prognoses and outlooks), public discussions about them,
- Support for existing and new forms of international cooperation, including participation in international projects.

More detailed specifications of the newly proposed SEP measures are found in the Summary of the current and newly applied State Energy Policy measures.

# **Summary of the current and newly applied State Energy Policy measures**

**approved by Decision of the Czech Government No. 211  
of March 10, 2004**

# INTRODUCTION

The specified priorities and goals of the State Energy Policy will be achieved through a set of implementation measures consisting of legislative measures, state support and reduction programmes, long-term outlooks and programmes, analytic, media and other measures. The set of measures has a dynamic character – if necessary, the implementation measures will be subject to modifications on the basis of monitoring and evaluations of the fulfilment of the goals of the State Energy Policy.

## 1. Legislative measures

The legislative measures represent the basic method of ensuring the fulfilment of the goals of the State Energy Policy in the conditions of a democratic society and market economy. They include strict observation of existing measures (the Energy Act, the Act on Economic Utilisation of Energy, the Act on Emergency Oil Reserves, the Atomic Act, links to Acts from the environmental sphere, the Mining Act and others, their amendments and new Acts aimed at achieving a higher degree of harmonisation with EU legislation (in accordance with Directives and Regulations that are already approved or ready to be approved). The legislative measures also represent a way of asserting national interests expressed in the State Energy Policy. The incorporation of the requirements of the State Energy Policy into Czech legislation will comply with the legislative work plan of the Czech Government.

### 1.1. Liberalisation of the electricity and gas market

Accelerating the process of liberalisation of the electricity and gas market in compliance with EU intentions and Directives No. 2003/54/EC and 2003/55/EC (on common rules for the internal electricity and natural gas market), harmonising the liberalisation process and the corresponding legislation mainly in these directions:

- Modifying the material and time schedule for the liberalisation of the electricity market in the Czech Republic (from Jan 1, 2005 for all customers except households, from Jan 1, 2006 for all end customers)
- Modifying the material and time schedule of the liberalisation of the gas market in the Czech Republic (from Jan 1, 2005 for all customers with continuous metering, from Jan 1, 2006 for all customers except households, from Jan 1, 2007 for all end customers)
- Unbundling the activities of the gas transmission system operator (by January 1, 2005 at the latest)
- Legally unbundling the activities of the electricity distribution system operator by January 1, 2005 at the latest (with the exception of operators that provide fewer than 100,000 connected customers with their services)
- Legally unbundling the gas distribution system operator by December 31, 2006 at the latest (with the exception of operators that provide fewer than 100,000 connected customers with their services)
- Widening the competence of the Electricity Market Operator (OTE) and publishing reports about the monitoring of electricity balances (from May 1, 2004)
- Widening the competence of the Ministry with the organisation (if necessary) of tendering procedure for construction of new capacities (May 1, 2004)

- Widening the competence of the Energy Regulation Office (ERÚ) in the sphere of price regulation (renewable sources, cogeneration) (May 1, 2004).

## **1.2. Access to the networks for cross-border exchanges in electricity**

In accordance with the EU intention of accelerating the creation of an internal electricity market inside the EU and in compliance with EU Directive No. 1228/2003/EC (on conditions for access to the networks for cross-border exchanges of electricity) creating conditions for the application of this Directive in the Czech Republic in this sphere within Czech legislation (in 2004):

- Delegating the fulfilment of obligations resulting from Commission Directive No. 1228/2003/EC to MPO, ERÚ and ČEPS
- Nominating the representative of the Czech Republic to the established committee.

## **1.3. Public interest including long-term planning**

Ensuring the existence of a fully operational electricity and gas market in accordance with the intention of the EU and priorities of SEP, simultaneously protecting the reliability, quality and price of the supplied forms of energy in accordance with the general economic interest and harmonising the approach to the obligation of the public service in the energy sector in compliance with Directives No. 2003/54/EC (electricity) and 2003/55/EC (gas), especially in these aspects:

- Defining the term 'public interest' in the energy sector (in 2004)
- Introducing the public interest especially in relation to long-term planning and publishing the outlook of energy sector development, including the respecting its outputs in the authorisation procedures, especially in the case of the fuel mix (in 2004)
- Amending the Act on Energy Management of Energy and extending the energy outlook to 30 years (2004)
- Incorporating a long-term outlook for prices and tariffs relations of energy commodities into the State Energy Policy (in 2005)
- Widening the competence of OTE to publish reports about electricity balances (in 2004)
- Widening the competence of the Ministry of Industry and Trade to the organisation (if necessary) of tendering procedure for the construction of new capacities (May 1, 2004)

## **1.4. Protection of end customers**

Ensuring a high level of protection for end customers under the conditions of a liberalised electricity and gas market in accordance with the intention of the EU and harmonising the liberalisation process and corresponding legislation with Directives No. 2003/54/EC (electricity) and No. 2003/55/ES (gas) mainly in these aspects:

- Defining the term 'universal service' in the energy sector (in 2004)
- Applying universal service to the supplies of electricity and connected services for the price determined by the Energy Regulation Office (ERÚ) for households that request it or that will not make use of the right to select a supplier (in 2007)



- Processing information about the long-term development of price relations between energy commodities within the competence of the Energy Regulation Office
- Imposing the obligation on electricity suppliers to inform their customers about the contribution of each energy sources (including renewable sources) to the overall fuel mix of the supplied electricity (in 2004)
- Imposing the obligation on electricity suppliers to publish information about emissions of greenhouse gases and radioactive waste connected with the generation of supplied electricity (in 2004)
- Imposing the obligation on electricity suppliers to give their end users the right to: the information on the requested form and content of supply contracts; transparent published information about prices and rates for energy and services; timely information about changes of supply terms and rates; the possibility to change over to another supplier without any barriers or charges; ensuring a simple, transparent and inexpensive system of dealing with objections and complaints, etc. (in 2004).

### **1.5. Extending measures supporting the economic utilisation of energy**

Strict application and extension (with an Amendment to Act No. 406/2000 Coll. and connected regulations) of the indicative targets specified in the State Energy Policy in compliance with the principles of the energy policy of the EU (the Green Book), mainly:

- Elaborating, completing and updating territorial energy policies periodically
- Making stricter the obligations of achieving minimum efficiency levels of generation capacities and not exceeding maximum distribution systems losses
- Making stricter requirements for economical use of energy in buildings
- Extending the use of energy labels to additional electricity appliances
- Verifying the efficiency of energy processes through energy audits, including efforts to find solutions for higher utilisation of secondary energy sources
- Incorporating the provisions of Directive No. 2002/91/EC on energy performance of buildings into Czech legislation, and initiating improvements in their energy parameters and reducing the requirements for energy consumption in this way (in 2004).

### **1.6. Renewable energy sources**

Promoting the use of renewable energy sources with new rules and with an extension of the competence of the Energy Regulation Office in accordance with Directive No. 2001/77/EC and for the purpose of achieving the national indicative target specified in the State Energy Policy (or in the National Programme for Economical Energy Management and Use of Renewable and Secondary Energy Sources) as follows:

#### **1.6.1. Support for electricity production from renewable energy sources**

- Preserving the existing principle of a the priority right for connection to the transmission or distribution system and the priority right to transport of electricity via the transmission or distribution system

- Preserving the right to obligatory purchase of electricity produced from renewable sources (regulated prices) in the first stage until the full liberalisation of the electricity market (in 2004)
- Introducing a system of issuing guarantees of origin of electricity produced from renewable energy sources (in 2004)
- Introducing a system of tradable green certificates of electricity produced from renewable energy sources with regulated prices of certificates and obligatory quotas for their purchasing by those suppliers that are defined in the Act
- Guaranteeing the minimum amount of revenue for a unit of produced electricity to investors in renewable energy sources for the period of at least 15 years from the date of putting the source into operation
- In accordance with the results of performed analyses, and if the approach to promotion for renewable sources is unified in the EU, adapting the promotion system in the Czech Republic to the unified EU system to make it functional in the fully liberalised market.

#### **1.6.2. Promotion for heat production from renewable energy sources**

- Preserving the existing principle of purchasing heat energy produced from renewable sources in accordance with the valid Energy Act
- For the development and refurbishment of heat generation sources, introducing the obligation (within conditions specified by the law) to produce a part of the supplied energy from renewable energy sources (in 2004)
- Introducing the obligation (within conditions specified by the law) to cover a part the heat consumption of new and refurbished buildings from renewable energy sources (in 2004).

#### **1.7. Promotion for using cogeneration of electricity and heat**

Ensuring the fulfilment of Directive No. 2004/8/EC on promotion of cogeneration based on a useful demand in the internal energy market, especially through the introduction of new rules and extension of the competence of the Energy Regulation Office, including the preparation of a separate Act on promotion of cogeneration of electricity and heat as follows:

- Preserving the existing principle of a the priority right for connection to the transmission or distribution system and the priority right for transport of electricity via the transmission or distribution system
- In the first period, preserving the principle of the obligatory purchase of electricity at market prices with a regulated supplementary price
- In accordance with the results of performed analyses, and if a unified support system of cogeneration of electricity and heat is established in the EU, harmonising the support system in the Czech Republic with the unified support system of the EU.

#### **1.8. Greater use of alternative fuels in transport**

Ensuring promotion for EU intentions (increasing the share of alternative fuels in road traffic) in accordance with Directive No. 2003/30/EC on the promotion the use of biofuels or other renewable fuels for transport (natural gas, biofuels or possibly hydrogen) and in accordance with the Amendment to the Air Protection Act No. 86/2002 Coll.

## **1.9. Investment Incentives**

Making sure that investment incentives granted at present (in accordance with Act No. 72/2000 Coll. and its amendment No. 453/2001 Coll.) take into account the priorities of the State Energy Policy to a greater extent and (within the next Amendment to Acts dealing with investment stimuli) considering the increased significance of projects supporting:

- Energy savings
- Cogeneration of electricity and heat
- Renewable energy sources
- Higher utilisation of indigenous resources of primary energy

## **1.10. Measures against the risk of growing energy imports dependence**

Opposing the risks of growing energy imports dependence expressed in indicative percentage limits of these dependence in the State Energy Policy by the following measures:

- Permanently analysing the development factors of the energy imports dependence (from 2004 on)
- Using the results of the analyses to take measures aimed at maintaining this dependence within the specified indicative limits, including respecting them in the long-term planning of the energy sector development and respecting the results in the authorisation procedure, mainly as regards the fuel mix (from 2004 on)
- Imposing the obligation to elaborate information for the European Commission (every three months) about imports of electricity from third countries in compliance with the intention of the EU to strengthen the reliability and security of the internal EU electricity market.

## **1.11. Authorisations for the construction of electricity generating plants and heat sources, including the creation of conditions for the tendering procedure in cases of endangered reliability of supplies**

Harmonising legislation concerning authorisations for the construction of new electricity and heat generating capacities with Directive No. 2003/54/EC by the adding of the following items into Czech legislation to ensure the fulfilment of the goals of the State Energy Policy (valid from 2004 on):

- Protection of public health and safety
- Land use and sitting
- Fulfilment of public service obligations
- Reconciliation of the type and origin of fuel sources with the indicators of the State Energy Policy (the Long-term outlook, Indicative programme of renewing and replacing outdated electricity generating plants and Long-term indicative programme for the utilisation of renewable energy sources)
- Ensuring the right of the Ministry of Industry and Trade to prepare and announce a call for tenders for the construction of new generating capacities that would cover the expected consumption of electricity in accordance with the EU approach in cases when the authorisation procedure is not able to provide sufficient capacities for this purpose. The tendering procedure must comply with the conditions of Directive No. 2003/54/EC. The tendering

procedure must also be applicable to the promotion for new technologies both in the sphere of sources and in the sphere of new efficient measures on the consumption side (in the form of pilot projects).

### **1.12. Management of the energy sector in states of emergency**

Increasing the readiness and robustness of energy systems to ensure the required functionality of energy sector in extraordinary conditions (widespread breakdown, terrorist attacks, etc.) and states of emergency accompanied by the public announcement of a state of emergency in accordance with Act No. 458/2000 Coll. so that these systems can provide the required support to meet the basic needs of the population, emergency services, rescue forces, armed forces and armed security forces, support for the execution of public administration and uninterrupted production by economic entities necessary for these purposes to the required extent (in accordance with Act No. 240/2000 Coll. and 241/2000 Coll.). The following measures are to be taken for this purpose:

- Harmonising the contents of the measures aimed at increasing the readiness and robustness of energy sector with the contents of economic measures for states of emergency (within the next Amendment to emergency laws)
- Paying attention to the preparation of stand-by energy system alternatives so that they can provide priority consumers with at least basic supplies of energy
- Supporting the development of stand-by sources of electricity
- Co-operating with regional self-administration bodies.

### **1.13. Strategic energy reserves**

Taking the following steps in compliance with the system (under preparation) of increasing strategic reserves of oil and oil products and possibly of natural gas and nuclear fuel in the EU:

- Incorporating the principles of the system into Czech legislation (after the unification of approach in the EU)
- Looking for a solution for ensuring strategic reserves that will have minimum impacts on the state budget, e.g. an agency method, which is common in the EU countries
- In the case of nuclear fuel, the strategic reserves should be in a form fuel elements that are suitable for loading into a reactor
- Carrying out strategic advance stripping in open coal mines to increase the reliability of coal supplies for power stations.

### **1.14. Reasonable revision of regional environmental limits for brown coal mining**

Making reasonable revisions of the existing regional limits for brown coal mining in accordance with the State Energy Policy envisaging an increase of availability of brown coal to promote the renewal of electricity generating plants oriented at indigenous energy sources. The original Government Decisions No. 331, 444, 490 of 1991 have fulfilled their purpose and they have been replaced with measures ensuring comprehensive landscape, settlements and environmental protection. Cooperation with local self-administration bodies is required for the implementation of these measures.

### **1.15. Wider incorporation of environmental principals into the tax system**

In accordance with Directive No. 2003/96/EC on the framework for taxation of energy products and electricity the following step is to be taken:

- Incorporating the Directive into Czech legislation, including compensation measures in the tax system while maintaining the principle of not increasing the tax burden (2008).

### **1.16. Integrated environmental protection system**

Ensuring strict compliance with the requirements of Directive No. 96/61/EC that has already been transposed into Czech legislation with the new Act No. 76/2002 Coll. on integrated prevention (IPPC) of March 1, 2002 that refer to the energy sector (electricity generating plants, heat plants, refineries and coke plants), sources and consumption of energy.

### **1.17. Greenhouse gas emissions allowance trading**

Taking the following steps in accordance with the prepared greenhouse gases emissions allowance trading, covered in the EU by Directive No. 2003/87/ES:

- Implementing the Directive into Czech legislation
- Using its application to support the goals of the State Energy Policy so that the goals of the long-term energy outlook should not be endangered.

## **2. State supporting and dumping programmes**

The state supporting and dumping programmes represent a specific measure for the achievement of the defined goals of the State Energy Policy. Their goal, scope and the implementation measures used are defined by the law or Government decisions.

### **2.1. The National Programme for Economical Energy Management and Use of Renewable and Secondary Energy Sources – for the period 2006 - 2009**

Maximising the efficiency of energy utilisation in accordance with the requirement of the State Energy Policy by increasing the force of the “National Programme for Economical Energy Management and Use of Renewable and Secondary Energy Sources”. Within the preparation of the National Programme for 2006 to 2009 (in 2004) evaluating the efficiency of measures that have been taken so far, comparing them to processes used in EU countries, assessing the sufficiency of its support and its incentive effects and implement the following issues:

- Significant increase in funding (at least three times current levels) to increase the support for energy efficiency and utilisation of renewable and secondary energy sources
- Stabilisation and extension of the validity of individual incentives
- Determining the priorities for support with the strengthening of support to projects aimed at progressive technologies and methods of increasing efficient energy use
- Transparent and efficient organisation of granting support and checking the proper use of funds and evaluating the contributions of the “National Programme”
- Using the possibilities provided by the EU within the 6<sup>th</sup> Action Programme in energy and the Programme based on the Decision of the EP and Council No. 1230/2003/EC (“Intelligent Energy – Europe”) to support the National Programme
- Application of the provisions of Directive No. 2002/91/EC on the energy performance in buildings leading to improvements in their energy parameters and decreasing requirements for energy consumption
- Strengthening the awareness of experts and the general public of the importance of knowledge of energy and environmental protection, mainly in the sphere of maximum efficiency and economy of energy use
- Specification of the directions and goals of the “National Programme” in annual State Support Programmes to support energy savings and the use of renewable energy sources.

### **2.2. Research and development support programmes, including the National Research Programme**

In compliance with the implementation of the research and development (RD) programmes, including the National Research Programme (in accordance with Government Decision No. 517 of May 22, 2002) in the competence of the Ministry of Industry and Trade and other ministries ensuring their higher focus on the priorities of the State Energy Policy:

- Ensuring co-ordination of, especially, state-supported energy research and development as part of the new status of the Czech Energy Agency (in 2005 as part of the Amendment to Act No. 406/2000 Coll.)
- Supporting R&D projects for the efficient use of renewable energy sources
- Supporting R&D projects aimed at energy savings and the efficient use of energy
- Supporting R&D projects for maximum utilisation of indigenous energy resources
- Using the possibilities provided by the EU within the 6<sup>th</sup> Action Programme in energy and the Programme based on the Decision of the EP and Council No. 1230/2003/EC ("Intelligent Energy – Europe") to support research and development.

### **2.3. National Programme of reducing emissions especially from large combustion sources of air pollution**

In accordance with EU Directives (80/2001/EC, 81/2001/EC and 96/61/EC) and with regard to the obligation to achieve national emission limits for SO<sub>2</sub> and NO<sub>x</sub> by 2010, ensuring the fulfilment of the National Programme of reducing emissions of solid substances, SO<sub>2</sub> and NO<sub>x</sub> from large combustion sources of air pollution.

### **2.4. Dumping programmes for the coal, ore and uranium industries**

Specifying the participation of the state in completing the restructuring of the coal sub-sector in compliance with measures taken before the accession to the EU aimed at increasing the competitiveness of coal mining and removing the consequences of mining activities that occurred before the privatisation of coal companies:

- The long-term energy outlook of Czech Republic until 2003 will include clarification of the position of indigenous resources of solid fuel, including the scope of activities and dumping of the coal, ore and uranium industries
- Using funds approved for the removal of previous damages in the Moravian-Silesian region and the regions of Ústí nad Labem and Karlovy Vary in such a way that they should not have any negative impacts on the future economy of the mining companies
- Implementing the removal of consequences of mining activities through state companies only (DIAMO, Palivový kombinát Ústí, Východočeské doly), including other locations taken over from the mining companies as part of the dumping programmes
- Cooperation with the regional self-administration bodies as part of the application of these programmes.

### **2.5. Programmes solving the social consequences of employment reduction in the coal and electricity sub-sectors**

In accordance with continuing employment reductions mainly in the coal sub-sector and electricity sub-sector, analysing its development and creating the conditions for solutions as part of measures and programmes for creating new jobs (programmes for employment development as part of development of the transport and housing infrastructure, industrial zones and other measures). The preparation and

implementation of these measures should involve cooperation with the local self-administration bodies.



### **3. Long-term outlooks and programmes**

The elaborating, adopting and publishing transparent, non-discriminating long-term documents as part of energy policy represents a new EU requirement to be accepted in the State Energy Policy.

#### **3.1. Harmonisation of the territorial energy policies with State Energy Policy**

The State Energy Policy must be harmonised with territorial energy policies that are based on it in accordance with Act No. 406/2000 Coll. on Energy Management. The self-administration authorities whose energy policy is already approved and those whose energy policy is in the process of preparation will ensure this harmonisation and adaptation.

#### **3.2. Long-term energy outlook until 2030**

The long-term energy outlook represents the basis for the evaluation of investors' intentions dealing with the development of new sources (within the authorisation procedure) and background document for possible tendering procedure concerning the construction of new sources if the authorisation procedure does not ensure a sufficiently reliable and sustainable balance of capacities covering expected future demand. In this context it is necessary to:

- Elaborate and publish the Czech Republic's long-term energy outlook until 2030, if possible at the same time as the State Energy Policy (in 2004)
- Verify the reliability of the national energy systems during the development of long-term energy outlook
- Observe the indicative targets of the long-term energy outlook when authorising construction of new generation capacities, selecting priorities for research and development in energy and in territorial energy policies (on a permanent basis).

#### **3.3. Indicative programme of renewal and replacement of outdated electricity generating plants by capacities with a higher energy efficiency and higher environmental friendliness**

The Indicative programme of the renewal and replacement of outdated electricity generating plants by capacities with a higher energy efficiency and higher environmental friendliness is a newly proposed measure supporting the fulfilment of the goals of the State Energy Policy. It is an expression of adopted demanding goals concerning self-sufficiency, reliability, efficiency and sustainability of energy sector that influences the character of the electricity system significantly. It is a part of the long-term outlook of energy sector:

- Elaborating and publishing the Indicative programme of the renewal and replacement of outdated electricity generating plants by capacities with a higher energy efficiency and higher environmental friendliness until 2030 (in 2005)
- Observing the goals of the indicative programme when authorising construction of new generation capacities, selecting research and development priorities supported by the state, in regional energy policies and in possible tendering procedure concerning the construction of new capacities

- if the authorisation process does not ensure a sufficiently reliable and sustainable balance of sources covering expected future demand (permanently)
- Cooperation with regional self-administration bodies as part of the preparation of this programme

### **3.4. Long-term indicative programme for utilisation of renewable energy sources in the Czech Republic**

A thorough and conclusive analysis of the potential of individual kinds of renewable energy sources in the Czech Republic must be elaborated in compliance with the intention of the EU to use renewable energy sources in an optimum way for the purpose of increasing independence from external energy sources, to increase reliability of the energy system, to reduce the unfavourable impacts of the energy sector on the environment, to solve landscape protection problems and to solve social and employment problems. The share of expected use of renewable energy sources is significant and the growth rates of energy and heat generation based on them is exceptionally high. This is why a particular strategy must be determined that will be based on a conclusive economic evaluation and, if necessary, other measures and measures for the implementation of expected trends should be proposed. The programme must also contain conditions and activities in the sphere of agriculture, forestry, petro-chemistry and other sectors that will create conditions for farming biomass, producing biogas and biofuel, etc. The preparation of this programme should involve cooperation with regional self-administration bodies.

### **3.5. Long-term stabilisation of prices and mutual tariff relations for energy commodities**

In compliance with the intention of the EU to ensure the existence of a fully operational electricity and gas market and in accordance with the general economic interest to secure the reliability, quality and prices of the supplied forms of energy, the transparent conditions for end users' must be created for their decision-making on selecting individual types of energy and benefits connected with the offered tariff in a longer-term horizon. In compliance with the need to protect end users in the energy market the following steps are to be taken:

- Processing of information about the long-term development of price relations of individual energy commodities through the revision of Energy Regulation Office obligations (from 2004 on)
- Imposing an obligation of the supplier of last resort that obliged to supply electricity or gas at prices determined by the Energy Regulation Office to households and small customers who have not arranged for supplies from another supplier.

## **4. Analytic, media and other measures**

Informing the public about the intentions of the State Energy Policy is an essential part of its implementation. Analytic work has a feedback function for state bodies and for keeping the public informed about the fulfilment of the goals of this policy.

### **4.1. Evaluating and analytic activities**

Regarding the Czech Republic energy sector, the accession to the EU and harmonisation of rules will principally change the rules of execution of its activities. This change will require the standardisation of a lot of analyses that will include:

- Evaluation of the fulfilment of goals and indicative indicators of the State Energy Policy (once every three years)
- Analyses of the development of and long-term supplies of energy (continually, annually)
- Analyses of the development of energy and electricity intensity (continually, annually)
- Analyses of the development of impacts of energy sector on the environment (continually, annually)
- Analyses of the development of impacts of the implementation of the energy policy on employment and household budgets (once every three years)
- Analyses of development of energy import dependency (continually, annually)
- Analyses of development of the share of renewable energy sources in the energy balance (continually, annually).

### **4.2. Energy statistics**

Collecting and analysing data and information and the methodology of statistical reports in energy sector has been principally adapted to the methodology of Eurostat, the methodology used by the International Energy Agency and in the EU. It is necessary to adapt statistics, collection and processing of data and information in energy sector to the requirements of the Decision of the EP and Council No. 2367/2002/EC on the Statistical Programme of the Community for 2003-2007 and to ensure the evaluation of the fulfilment of the national indicative target of the share of electricity produced from renewable energy sources in the total gross consumption of electricity.

### **4.3. Media measures**

#### **The Programme for education and promotion of the goals and results of implementation of the energy policy**

The rules harmonised with the EU increasing the importance of preparation and implementation of the goals of the State Energy Policy will include programmes of education and for promoting the goals and results of the implementation of the State Energy Policy, including publishing analytic materials and programmes (including renewable energy sources) and public discussion of the analyses, policies and programmes.

## **4.4. Other measures**

### **Using support from EU structural funds**

The preparation of projects and use of support from the EU structural funds must involve consistent application of the management and control system rules specified in the Commission Regulation No. 438/2001.

### **Cooperation with international and inter-governmental organisations that the Czech Republic is member of (the Energy Charter Treaty, IEA, MAAE, OECD/NEA and others)**

Using the knowledge gained through the Czech Republic's membership of several international and inter-governmental organisations focusing on analyses of the current and future development of the energy sector around the world, on the development of modern technologies and measures directed at the sustainable development of energy systems in the conditions of the Czech Republic.

### **Implementation of common projects regarding the reducing of greenhouse gases emissions**

Participating in the next stage of common projects in accordance with the Czech Republic's participation in international activities in the area of reducing of greenhouse gases emissions to accelerate the introduction of new technologies with a higher energy efficiency and lower emissions in all fields.

## **5. Evaluation of the impact of measures carried out to ensure the fulfilment of the SEP goals on the state budget**

Most of the proposed measures have no impact on the state budget.

The following measures are exceptions:

- a) Dumping programmes for the coal, ore and uranium industries in the amount adopted in previous government decisions, specified in yearly budgets
- b) The National Programme for Economical Energy Management and Use of Renewable and Secondary Energy Sources, the scope of which should be tripled compared to the current level
- c) The National Research and Development Programme and other state research and development support programmes, the scope of which will remain the same as current levels or be increased (this is not only a case of new funds, but also better use of the research and development support system in compliance with SEP priorities)
- d) Creating and maintaining strategic storage capacities of energy sources that will be determined after the unification of the approach to the solution of this issue within the EU and in accordance with the solution that will be adopted in the Czech Republic (if the agency method is used, emergency reserves can be ensured without demands on the state budget).

**Table 1 – Schedule and method of implementation of the SEP measures**

No.	Tool	Responsibility	Preparation	Expected effect	Implementation method
<b>1.</b>	<b>Legislative measures</b>				
1.1	Liberalisation of the electricity and gas market	MPO	2003-2004	2005-2007	Amendment to the Energy Act (EA)
1.2	Access to the networks for cross-border exchanges in electricity	MPO	2003-2004	2004	Amendment to the EA
1.3	Public interest, including long-term planning	MPO	2003-2004	2004 2005	Amendment to the EA Amendment to the Energy Management Act
1.4	Protection of end users	MPO	2003-2004	2005 2007	Amendment to the EA Amendment to the Energy Management Act
1.5	Extending measures supporting energy savings	MPO	2003-2004	2004-2005	Amendment to implementation regulations of the Energy Management Act
1.6	Renewable energy sources	MPO, MŽP	2003-2004	2004-2006	A new Act
1.7.	Promotion of cogeneration of electricity and heat	MPO	2003-2004	2004	Amendment to the EA Amendment to the Energy Management Act
1.8.					
1.9	Investment incentives	MPO	2003-2004	2004	Amendment to Act
1.10	Measures against the risks of growing energy imports dependence	MPO	2003-2004	2004-2005	Amendment to the EA
1.11	Authorisations for the construction of electricity and heat generating plants	MPO	2003-2004	2004	Amendment to the EA
1.12	Energy management in states of emergency	MPO, MV	2003-2004	2004	Amendments to Acts
1.13	Strategic energy reserves	MPO, SSHR	2003-2004	2004	Amendment to Act and a new Act
1.14	Reasonable revision of regional environmental brown coal mining limits	Regions	2003-2004	2005	Revision of the scope of regional environmental limits
1.15	Widening environmental principles in the tax system	MF, MŽP, MPO	2004	2005-2008	Amendment to Act
1.16	Integrated environmental protection system	MŽP, MPO		permanently	Application of Act No. 76/2000 Coll.
1.17	Greenhouse gas emission allowances	MPO, MŽP, ŠFŽP, ČEA	2003-2004	2004	Application of Directive

	trading				SEP(2003)364
<b>2.</b>	<b>State support and dumping programmes</b>				
2.1	National Programme for Economical Energy Management and Use of Renewable and Secondary Energy Sources	MPO, MŽP, ŠFŽP, ČEA	2004	2005-2008	National Programme for 2006-2009
2.2	Research and development support programmes incl. the National Research Programme	MPO, ČEA	2005	continuously	Amendment to Act No. 406 Use of other programmes
2.3	National Programme for reducing emissions from especially large combustion sources of air pollution	MPO, MŽP	2004	2005	National Programme
2.4	Dumping programmes for the coal, ore and uranium industries	MPO		continuously	Implementation of the programmes
2.5	Programmes for solving social consequences of reducing employment in the coal and electricity industries	MPO, MPSV	2004	continuously	Implementation of the programmes
<b>3.</b>	<b>Long-term outlooks and programmes</b>				
3.1	Ensuring harmony of the State Energy Policy with the territorial energy policies	MPO and Regional Offices	2004-2005		Updating territorial energy policies
3.2	Long-term energy outlook until 2030	MPO	2003	2004	Development scenarios with indicators
3.3	Indicative programme for renewal and replacement of outdated electricity generating plants	MPO	2003-2004	2005	Scenarios for possible renewal and development of electricity generating plants
3.4	Long-term indicative programmes for using renewable energy sources in the Czech Republic	MPO, MŽP, MZe	2004-2005	2006	Scenarios for development and proposals of measures
3.5	Long-term stabilisation of prices and mutual relations of energy commodity tariffs	ERÚ, MF	2004 and further on, annually	2005 and further on	Price development prognoses
<b>4.</b>	<b>Analytic, media and other measures</b>				
4.1	Evaluating and analytic activities	MPO, ERÚ, ČEA	2004 and further on, annually		Published analyses
4.2	Energy statistics	ČSÚ, MPO	2004 and further on	2004	Specification of the methodology and contents of

					statistical information
4.2	Media measures	MPO, ČEA, ERÚ, MŽP, SFŽP	2004 and further on, continuously		Publishing programmes, scenarios, analyses, etc.
4.3	Other measures	MPO, ČEA, ERÚ, MŽP, SFŽP	2004 and further on, continuously		Cooperation with international and inter-governmental organisations, participation in their projects

MPO = Ministry of Industry and Trade  
 MŽP = Ministry of the Environment  
 MV = Ministry of the Interior  
 SSHR = State Administration of Material Reserves  
 MF = Ministry of Finance  
 SFŽP = State Environmental Fund  
 ČEA = Czech Energy Agency  
 MPSV = Ministry of Labour and Social Affairs  
 MZe = Ministry of Agriculture  
 ERU = Energy Regulation Office

# **Comprehensive Energy Scenario**

**approved by Decision of the Czech Government No. 211  
of March 10, 2004**



The preparation of the State Energy Policy has been based on a set of comprehensive energy scenarios. The scenarios contain the fundamental energy, environmental and social parameters of the possible development of energy sector until 2030 depending on GDP growth rate and state measures aimed at influencing the development of energy sector.

## **1. Methodology of the scenarios**

For the development of the energy scenarios the EFOM/ENV (Energy Flow Optimization Model – ENVironment) model was used. This is a linear dynamic optimisation model focused on the economy, energy and environment. It has been developed by several European countries as part of various EU research & development programmes and it is being used in some countries now. The model has been accepted by the European Commission for the development of energy development outlook studies.

The aim of the model is to find a balance between demand and supply in the energy market with the least costs (total operational and investment) for the whole analysed period from the point of view of the economy as a whole while respecting market operation limitations (environmental, financial, political, social, etc.) The model allows the simulation of impacts of measures of the state economic and energy policy on the energy market, mainly:

- the impact of energy carrier prices changes on the volume and structure of demand for energy
- the impact of limitations or changes in the generation, mining or import of one energy carrier on the demand for other energy carriers
- the possibility of and costs connected with diversification of supplies of individual energy carriers
- the impact of changes in emission limits of individual pollutants (at the national level or at the level of individual sources) on the structure and amount of consumption of primary energy sources
- the costs of reducing emissions of individual pollutants
- the evaluation of economic efficiency of individual energy technologies, etc.

The model calculations have been made for the period of 2002-2035, but only data up to 2030 has been published. The longer time period has only been used for the purpose of verifying whether development continuity is not interrupted after the end of the prognostic period (2030).

The basic inputs and outputs of the model have been explained in the presented materials of the SEP.

## **2. Summary and findings of the developed scenarios**

In connection with the preparation of the SEP approx. 40 various scenarios and sensitivity analyses were processed.

### **2.1 Summary of the processed scenarios**

The scenarios have been classified from the point of view of the national economy and from the point of view of the energy sector.

As concerns the national economy three projections of GDP amount and structure development and demographic development (low, reference and high scenarios) have been developed. From the point of view of the energy sector some key moments have been taken into account:

- extending or not extending the life of the Dukovany nuclear power plant (JEDU),
- the possibility of new nuclear power stations construction,
- reasonable revisions of regional environmental limits for brown coal mining,
- prices and availability of fuels on the world market,
- stricter national limits for emissions of greenhouse gases.

By combining the above-mentioned possibilities, the following alternatives have been created:

- business as usual (no principal changes),
- no extension of the life of the Dukovany nuclear power plant,
- reasonable revision of regional environmental limits for brown coal mining,
- reasonable revision of regional environmental limits for brown coal mining + no extension of the life of the Dukovany nuclear power plant,
- a non-nuclear alternative (shutting down the Temelín nuclear power plant and not extending the life of the Dukovany nuclear power plant),
- nuclear alternative (extension of the life of the Dukovany nuclear power plant + possible construction of new nuclear power plants),
- alternative with limited sources (high fuel prices on the world market + possible extension of the life of the Dukovany nuclear power plant + possible construction of new nuclear power plants + possible revisions of mining limits),
- alternative with a stricter CO<sub>2</sub> emission limit (35 % reduction by 2030 in comparison to 2000 + possible extension of the life of JE DU + possible construction of new nuclear power plants).

Most combinations of energy alternative with GDP development scenarios have been considered. Also, for the reference GDP scenario and the “business as usual” alternative, sensitivity analyses for the following have been made:

- investment costs of nuclear power plants,
- the price of imported black coal,
- the price of imported natural gas.

For the reference GDP scenario and the “business as usual” alternative a cost curve of the reduction in CO<sub>2</sub> emissions has also been calculated.

For the selected “Green” scenario, which was used as the base for the environmental impact assessments pursuant to Act No. 244/1992 Coll., a sensitivity analysis for various levels of GDP creation and natural gas price has been made.

Basic inputs used for the development of the scenarios:

- annual GDP growth rates until 2030 of between 3.22 – 3.99%,
- standard and most probable development of other factors (GDP creation structure, world prices for fuel and energy, technological development and other factors),
- increased utilisation of renewable energy sources (in compliance with the preparation of the Act on the promotion of electricity and heat produced from renewable energy sources and the specification of the national indicative target),
- an increase in the growth rate of energy sources utilisation efficiency.

## **2.2 Basic findings of the scenarios made for the period until 2030**

The analysis of the findings from the elaborated scenarios reveals the following tendencies:

- In the period ahead energy inputs will be utilised to a higher extent. Economic and social development can be ensured with a slight growth in consumption of total primary energy sources in the next 30 years. The energy intensity of GDP creation fell down in all cases with a higher rate than in any of the previous periods;
- In the period from 2015 to 2020 the Czech Republic should achieve the current average standard for GDP energy intensity posted by EU countries. The comparison of development scenarios for the quantity, structure and quality parameters of Czech energy sector shows positive development and a continued approach towards the parameters of EU countries energy sector in all cases;
- There are continuing significant reductions in polluting emissions and the Czech Republic is able to comply with adopted international obligations in this sphere;
- The need for energy imports keeps growing and imports of energy will burden the state's balance of payments to a greater and greater extent;
- The structure of primary energy sources consumption shows that it will become more diversified in all cases and will include indigenous and imported sources in a more balanced mix. Renewable energy sources will have the highest growth rate in all cases. The diversification of sources is a factor leading to security of energy supplies and competitiveness in energy markets;
- The structure of electricity generation will vary more in individual scenarios than the structure of primary energy sources consumption. The fuel preferred in individual scenarios mainly influences the structure of electricity generation;
- The evaluation of impacts on employment in energy sub-sectors reflects the high pressure expected as a consequence of growth in productivity and rationalisation of organisation structures, which will be reflected in staff reductions in energy sub-sectors in all cases. This development will be dynamic, especially in the initial period of the prognosis. From the point of view of energy sub-sectors, employment will mainly drop in black coal mining.

## **2.3 Multi-criterion evaluation of the energy scenarios**

The final evaluation of the energy scenarios also contains a multi-criterion analysis. The scenarios have been evaluated according to achieved criteria (parameters): energy intensity of the GDP creation, CO<sub>2</sub> emissions, need for energy imports, impacts on employment and the amount of discounted investment costs. Unbalanced as well as balanced criteria and other evaluation methods have been used.

## **2.4 Selection of the recommended scenario**

The final selection of the preferred development scenario falls within the competence of the Ministry of Industry and Trade, i.e. the Czech Government, as the selection is a political-strategic matter.

The selection of the “Green scenario” recommended by the Ministry and approved by the Government is based on the following facts:

- No source of primary energy is blocked administratively;
- The scenario offers entities in the energy sector the widest range of energy sources;

- This scenario envisages the lowest needs for energy imports and the lowest impacts on employment reduction;
- It provides the furthest outlook beyond 2030 as the increased availability of brown coal supplies is able to supply the new generation of coal power stations that will replace the existing coal power stations after 2010;
- This scenario shows the best resistance to fluctuations in world prices with favourable impacts on electricity and heat prices from large plants since the domestic mining of brown coal has the most transparent costs;
- This scenario corresponds best to the historical traditions of the Czech Republic;
- The scenario was the most frequently recommended alternative in the public discussion concerning the proposed SEP.

The decisive reasons for the “Green scenario” were the fulfilment of preliminary input assumptions and the need to reduce administrative and other limitations on the development of energy sources. The “Green scenario” was included in the set of six scenarios that the Ministry of Industry and Trade made available for public hearing in June 2003.

The development of new findings and, in particular, recommendations resulting from public hearing made it necessary to carry out a new calculation of the “Green scenario” that took these facts in consideration. The new calculation is referred to as the “Green scenario – U”.

### **3. Scenario with greater stress on the use of indigenous sources of fuel – “GREEN SCENARIO – U”**

The scenario is based on these fundamental conditions: increased availability of indigenous energy sources – brown coal (reasonable revision of regional environmental limits for mining), growth of energy efficiency in accordance with the intentions of the SEP, greater promotion of renewable energy sources and the possibility of constructing new nuclear energy sources.

#### **3.1 Specification of scenario input conditions:**

- Stagnation of demographic development until 2010 and a subsequent slight decrease until 2030;
- An annual GDP growth rate until 2030 of 3.22 – 3.99%;
- Standard and most probable development of other factors (further modernisation of the structure of GDP creation, moderate developments in world and domestic prices of fuel and energy, intensive technological development and other factors) ;
- Support for and increased application of renewable energy sources (in accordance with the preparation of the Act on Promotion for Renewable Sources and the specified national indicative target);
- Increased growth rate in energy sources utilisation efficiency.

#### **3.2 Applied material and system measures of the State Energy Policy:**

- Promotion and incentives for increased energy efficiency;
- Greater promotion of the use of renewable energy sources;
- Nuclear energy: today's configuration (Dukovany nuclear power plant + Temelín nuclear power plant) + 2 new nuclear units possible;
- Reasonable revision of regional environmental limits for brown coal mining;
- Removing the limits on black coal imports;
- Economic imports of electricity are possible, however up to a maximum of 5 TWh a year;
- Active use of granting authorisation procedure for the construction of new electricity and heat generating capacities;
- Targeted use of state research and development support programmes or the Act on Investment Incentives.

#### **3.3 Revisions of the “Green Scenario”**

The basic scenarios for the preparation of the SEP draft were calculated in April – May 2003 and information then available was used. Since then some new findings have appeared or opinions of solutions for selected problems have unified considerably. The public discussion organised by the Ministry of Industry and Trade, the evaluation of the environment impact assessment of the SEP and public hearings dealing with these evaluations and scenarios of the Ministry of the Environment have contributed other facts that the scenario was to respond to.

*This is why, as part of the preparation of the SEP proposal for the Czech Government (October – November 2003), the Ministry of Industry and Trade thought it necessary to make a new calculation of the “Green Scenario” that would take the above-mentioned facts into account. These modifications did not change the basic inputs and the concept of the “Green Scenario”, but they brought its outputs nearer the new reality.*

**The following modifications were involved:**

- a) In April 2003 the only data about the promotion of electricity generated from renewable sources that was available was from 2003 (Price Decision of the Energy Regulation Office No. 1/2003). This is why most scenarios were based on this level of 8 % of gross national electricity consumption support. However, to ensure the achievement of the national indicative target of 8 % of gross national electricity consumption in 2010 produced from renewable sources it was necessary to add some new generation sources to the scenarios outside the economic criteria (e.g. wind installations, solar and geothermal sources). At present a draft Act on the promotion of electricity and heat produced from renewable sources has been submitted to the Czech Parliament. This proposal gives greater support to renewable energy sources than in 2003 and in addition it gives a guarantee to investors that the profitability of new sources will be maintained for 15 years. This measure changes the position of renewable sources in comparison to the other energy sources.
- b) The Czech Government announced that around 2007 the heat supplied from district heating systems will be burdened with the same VAT rate as other energy commodities. This will lead to a price increase in heat from centralised sources up to 17% and will influence the conduct of customers towards increased economies or towards a changeover to other sources of heat.
- c) At present the Ministry of Finance is preparing the implementation of Directive No. 2003/96/EC on the taxation of energy products and electricity into our legal system. Compatibility of the tax rates for all kinds of mineral oil with the exception of natural gas for heat generation has been ensured with the Excise Tax Act, No. 353/2003 Coll. For the other energy commodities specified in the Directive a transition period until the end of 2007 has been agreed. Besides, EU working materials show that in the period from 2010 to 2020 solid fuel could be burdened by a tax level twice as high as the environmental tax that is being prepared now. The new calculation respects these changes.
- d) In the literature worldwide (technical and economical), data about electricity generation units of a higher performance (50 MW) that would use biomass has appeared recently. This technology was also included in the model calculations to compete with other technologies.
- e) From the point of view of the time necessary for the preparation of the construction of new nuclear units and the availability of new advanced and safer nuclear technologies on the market, their use in the scenario was modified in such a way that only two units will be put in operation in the period in question instead of three.

**These modifications have influenced the outputs of the original “Green Scenario”. The revised “Green Scenario” is referred to as “Green Scenario – U”. In this scenario the role of savings, renewable sources and natural gas is partly strengthened at the expense of solid, liquid and nuclear fuel with corresponding impacts on other outputs. These are mainly positive changes that have a favourable influence on the visions and goals of the SEP.**

The scenario accepted a lot of recommendations that appeared within the public hearing of the SEP proposal, which makes it more acceptable for entities that had objections to it. The changes are only reflected in the entire SEP in such a way that the long-term and short-term structure of primary energy sources and import limits in chapter 3.2.3 have been made more specific as well as the long-term target of the increase of the share of renewable energy sources in chapter 3.3.3.

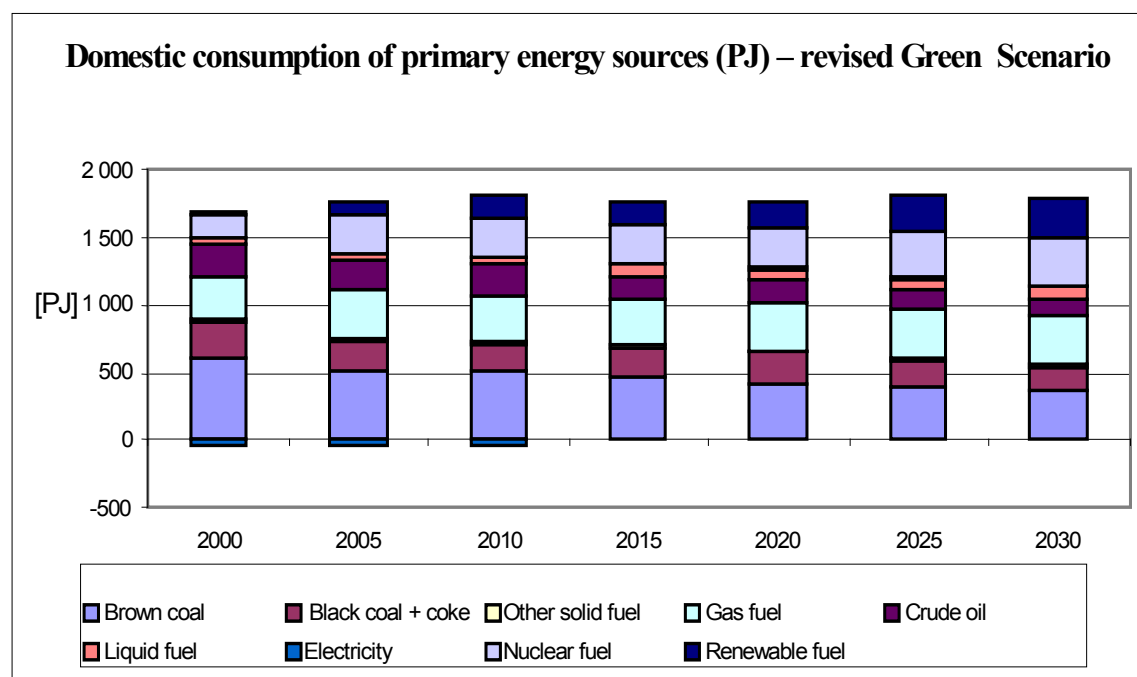
## 4. Outputs of “Green Scenario – U“

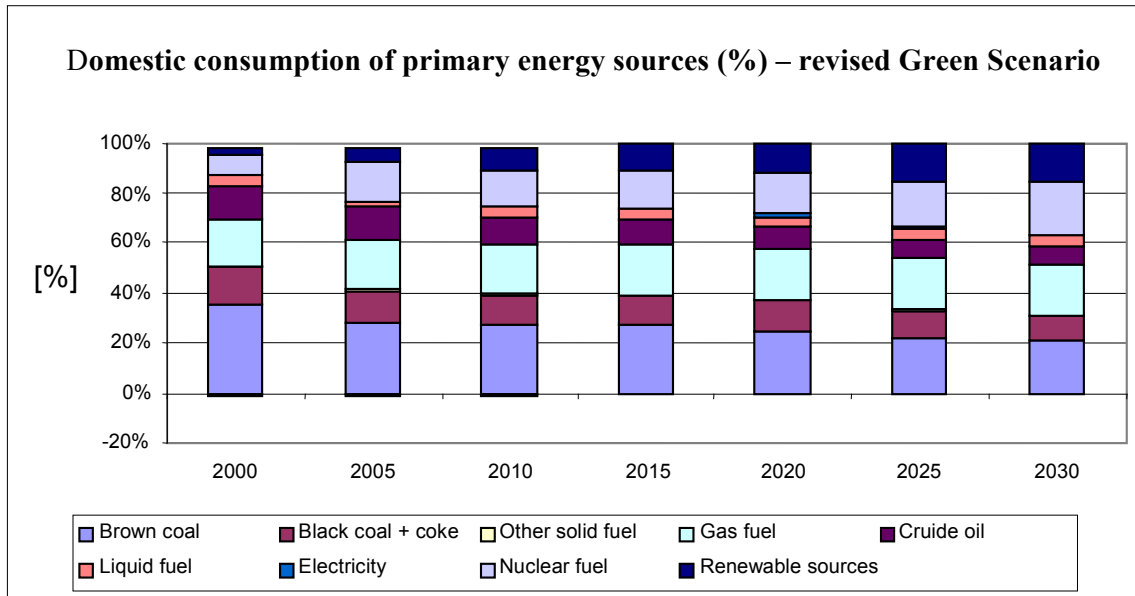
The following tables and charts present the results of the calculations. They document the general development of the “size” and structure of Czech Republic energy sector as the result of the influences of several internal and external factors, the market mechanism, the regulatory process and state interventions. The development shown proves the possibility of ensuring economic and social development in the Czech Republic with only a slight growth of primary energy sources consumption while complying with the criteria of sustainable development.

### 4.1 Probable amount and structure of primary energy sources consumption

PJ	2000	2005	2010	2015	2020	2025	2030
Total	1 672	1 730	1 775	1 782	1 787	1 810	1 797

Out of which:	2000	2005	2010	2015	2020	2025	2030
Brown coal	612	507	509	480	434	389	374
Black coal + coke	265	229	212	210	227	209	174
Other solid fuel	11	8	9	9	8	7	7
Gas fuel	316	373	359	353	366	366	370
Crude oil	239	222	209	180	152	139	127
Liquid fuel	72	51	67	76	80	82	86
Electricity	-36	-40	-35	1	18	18	1
Nuclear fuel	148	286	286	286	286	330	375
Renewable sources	44	93	159	187	215	269	283

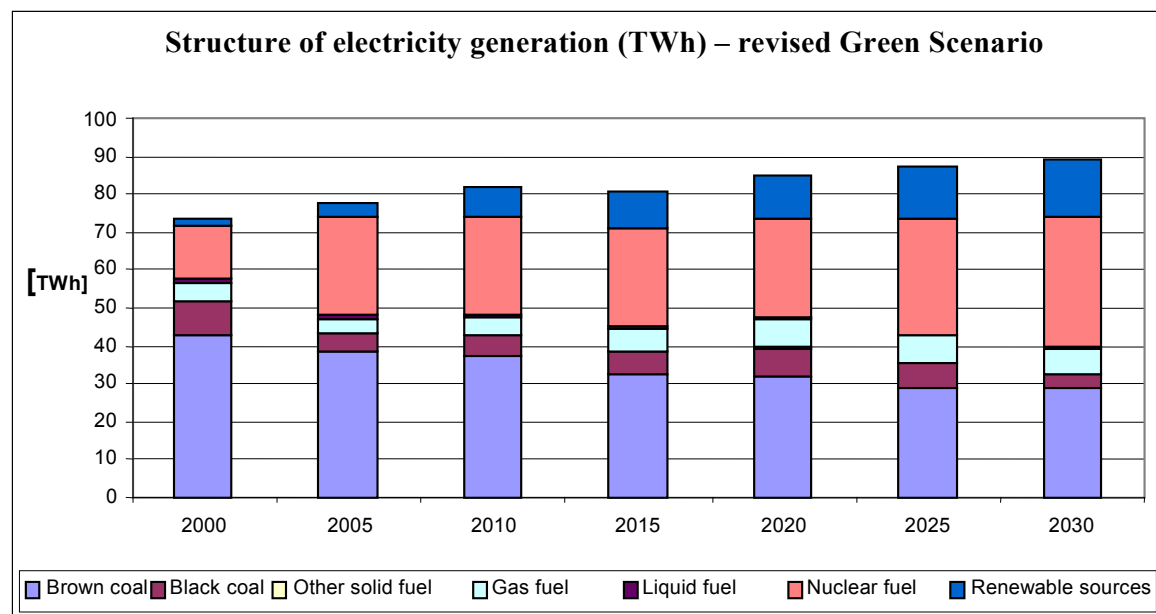




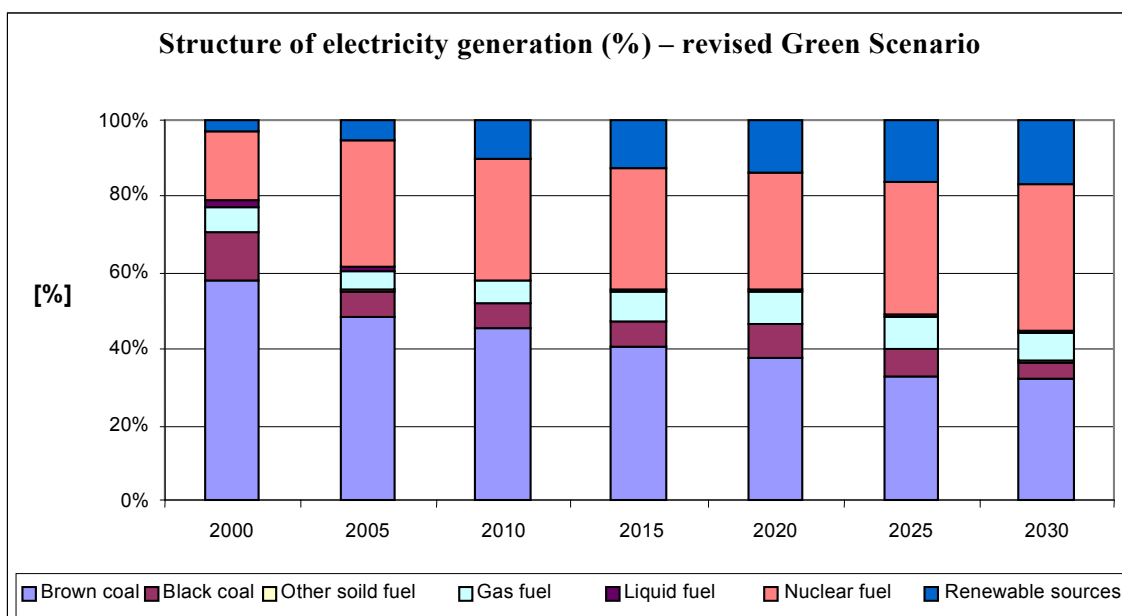
## 4.2 Probable amount and structure of electricity generation

TWh	2000	2005	2010	2015	2020	2025	2030
Total	73.73	78.20	82.37	80.85	84.95	87.49	89.17

Out of which:	2000	2005	2010	2015	2020	2025	2030
Brown coal	43.06	38.27	37.30	32.76	31.72	28.86	28.46
Black coal	8.94	5.18	5.58	5.26	7.79	6.36	4.34
Other solid fuel	0.14	0.06	0.10	0.10	0.07	0.06	0.06
Gas fuel	4.69	3.66	4.56	6.25	7.27	7.37	6.46
Liquid fuel	1.59	0.84	0.62	0.60	0.48	0.41	0.34
Nuclear fuel	13.59	26.04	26.04	26.04	26.04	30.24	34.44
Renewable sources	1.71	4.16	8.17	9.84	11.58	14.20	15.06

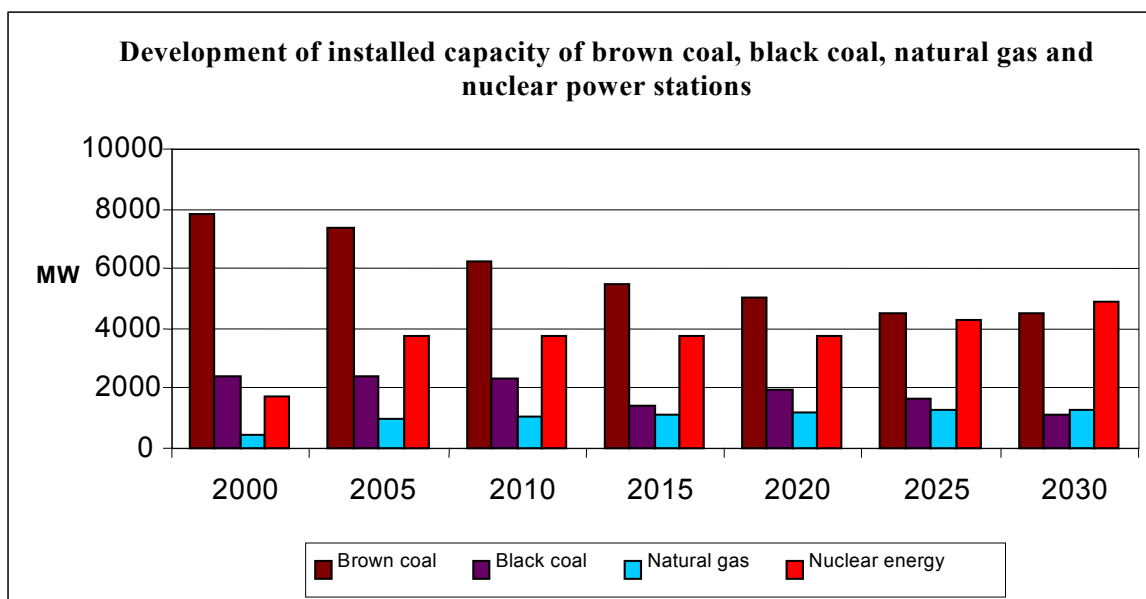






### 4.3 Development of installed capacity of power stations (except renewable sources)

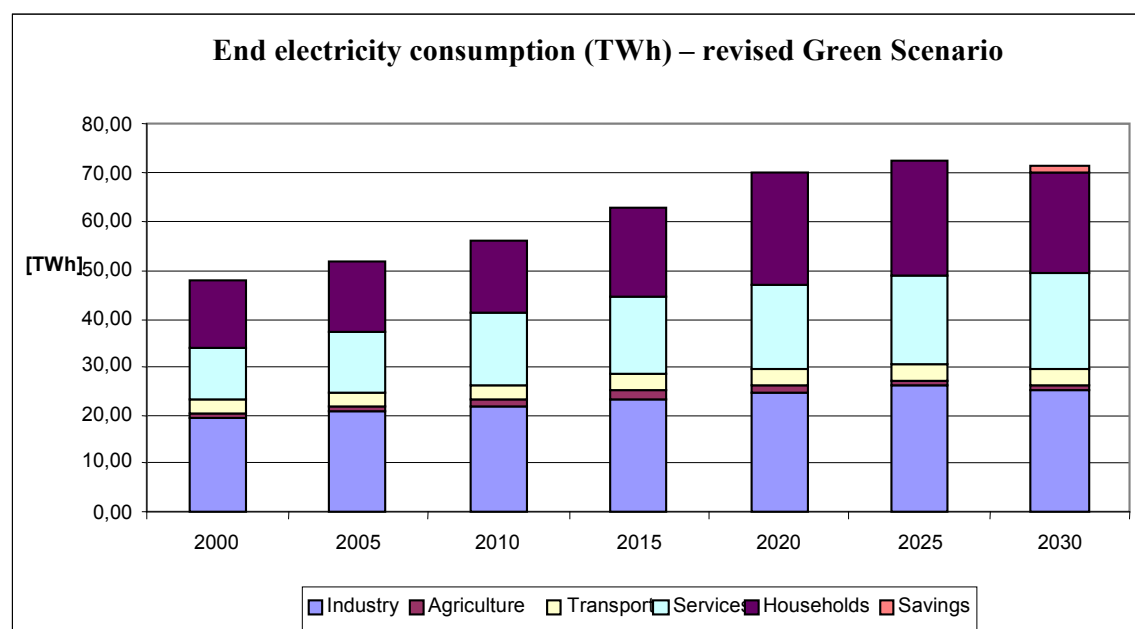
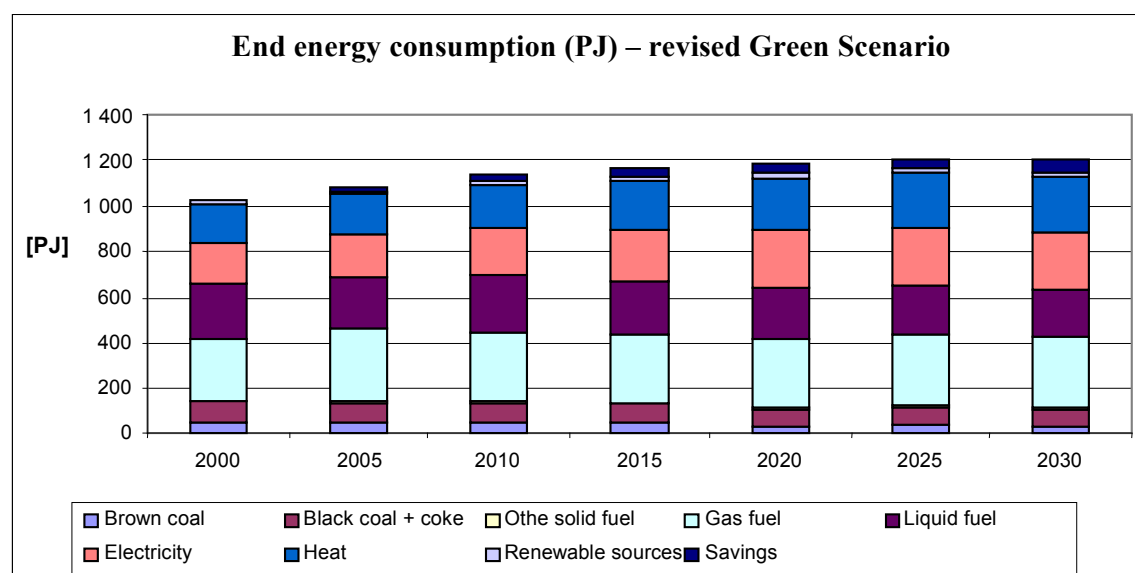
Fuel	Output [MW]	2000	2005	2010	2015	2020	2025	2030
Brown coal	Total installed capacity	7 854	7 360	6 273	5 491	5 056	4 530	4 528
	Residual capacity	7 854	7 290	6 203	3 721	1 494	393	391
	Newly installed capacity	0	70	70	1 770	3 562	4 137	4 137
Black coal	Total installed capacity	2 415	2 399	2 299	1 457	1 966	1 627	1 127
	Residual capacity	2 415	2 129	2 029	1 187	989	650	150
	Newly installed capacity	0	270	270	270	977	977	977
Natural gas	Total installed capacity	471	954	1 023	1 152	1 172	1 297	1 276
	Residual capacity	471	428	397	337	157	117	25
	Newly installed capacity	0	527	627	815	1 015	1 180	1 251
Nuclear fuel	Total installed capacity	1 765	3 722	3 722	3 722	3 722	4 322	4 922
	Residual capacity	1 765	1 760	1 760	1 760	1 760	1 760	1 760
	Newly installed capacity	0	1 962	1 962	1 962	1 962	2 562	3 162



#### 4.4 Probable amount and structure of end energy consumption

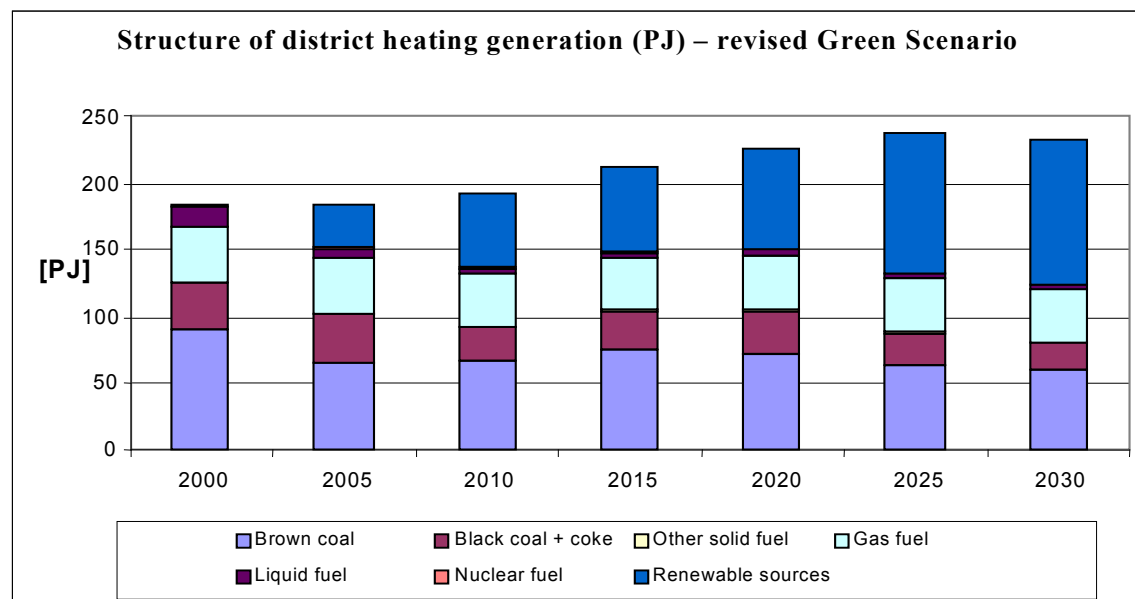
PJ	2000	2005	2010	2015	2020	2025	2030
Total	1 027	1 079	1 134	1 169	1 187	1 211	1 210

Out of which:	2000	2005	2010	2015	2020	2025	2030
Brown coal	51	40	42	39	25	31	26
Black coal + coke	83	85	84	84	78	80	77
Other solid fuel	8	7	7	7	7	6	6
Gas fuel	271	326	309	299	308	311	316
Liquid fuel	246	227	252	238	220	213	207
Electricity	173	186	202	227	253	261	253
Heat	180	184	197	216	231	245	244
Renewable sources	15	12	18	21	22	20	19
Savings	0	11	24	38	44	44	63



#### 4.5 District heating generation – structure by primary energy sources:

PJ	2000	2005	2010	2015	2020	2025	2030
Brown coal	90	66	67	76	74	63	60
Black coal + coke	36	36	25	28	31	25	21
Other solid fuel	1	0	1	1	0	0	0
Gas fuel	40	42	39	38	41	41	40
Liquid fuel	16	6	4	4	4	3	2
Nuclear fuel	0	0	0	0	0	0	0
Renewable sources	1	33	56	64	75	105	109
<b>Total</b>	<b>185</b>	<b>184</b>	<b>193</b>	<b>212</b>	<b>225</b>	<b>237</b>	<b>233</b>



#### 4.6 Renewable energy sources

##### a) Amount and structure of secondary and renewable energy sources consumption

PJ	2000	2005	2010	2015	2020	2025	2030
Biomass	18	62	121	146	173	228	242
Secondary heat	20	20	20	20	20	20	20
Other renewable sources	6	9	13	14	15	14	13
Waste	0	2	5	7	7	7	8
<b>Total</b>	<b>44</b>	<b>93</b>	<b>159</b>	<b>187</b>	<b>215</b>	<b>269</b>	<b>283</b>

##### b) Generation of electricity from renewable sources (TWh)

TWh	2000	2005	2010	2015	2020	2025	2030
Biomass	0.01	1.60	4.86	6.32	7.81	10.25	10.96
Small hydro power stations	0.52	0.80	1.05	1.05	1.05	1.05	1.05
Wind	0.01	0.57	0.93	1.01	1.25	1.44	1.44
Photovoltaics	0.00	0.00	0.00	0.00	0.00	0.01	0.01
Biogas	0.01	0.01	0.01	0.01	0.01	0.01	0.16

## 4.7 Probable coal mining (mil. tons)

Black coal	2000	2005	2010	2015	2020	2025	2030
Total mining	14.82	12.99	11.41	9.18	8.60	5.57	3.57

Brown coal	2000	2005	2010	2015	2020	2025	2030
Total mining	49.46	44.94	44.58	42.01	40.48	35.88	32.59

## 4.8 Fulfilment of the indicative targets of the State Energy Policy:

### a) Energy intensity of GDP creation

	2000	2005	2010	2015	2020	2025	2030
Energy intensity (MJ/CZK of GDP)	1.212	1.053	0.889	0.743	0.623	0.538	0.454

### b) Emissions:

	2010 limit	2000	2005	2010	2015	2020	2025	2030
CO <sub>2</sub> (mil. tonnes/year)	151	126	113	110	105	103	95	89
NO <sub>x</sub> (thousand tonnes/year)	286	397	296	273	277	275	270	265
SO <sub>2</sub> (thousand tonnes/year)	265	264	214	222	210	185	170	159
CO (thousand tonnes/year)		656	603	595	552	456	458	410

### c) Significance of renewable energy sources

	2000	2005	2010	2015	2020	2025	2030
Renewable sources (% of gross consumption of electricity)	2.7	6.2	11.3	12.1	12.9	15.4	16.8

### d) Import energy dependence

in %	2000	2005	2010	2015	2020	2025	2030
Dependence on energy imports	32.1%	41.2%	42.3%	45.9%	48.6%	53.0%	57.8%

### e) Impacts on employment in energy sectors

	2000	2005	2010	2015	2020	2025	2030
Employees	72 820	59 025	53 845	48 180	45 880	39 965	34 200
Reductions (in 30 years – 38 620 total)		13 795	5 180	5 665	2 300	5 915	5 765

### f) Investment (discounted investment costs):

Mil. CZK	2000	2005	2010	2015	2020	2025	2030
Total		390 641	574 568	671 801	680 260	586 442	511 713
Out of which generation of electricity		39 291	38 832	36 737	43 569	45 622	42 429

### Comments on the structure of investment costs:

The highest investment costs are in the household and transport sectors. The energy sector occupies is third. In both cases this is mainly caused by the relatively short-term life of household electric appliances and vehicles (mainly cars) compared to the life of energy technologies. Household appliances and cars are renewed regularly in approx. 7 to 12 year cycles. With regard to the population and the number of operated cars these costs are quite high in total. Per capita these expenses amount to CZK 3,000 a year for the renewal of electric appliances and 6,000 CZK for purchasing new cars.

## 4.9 Characteristics of the long-term outlook

If the material and system measures of the State Energy Policy mentioned in the introduction are applied along with incentives and if the state communicates with the entrepreneurial sector, energy sector will achieve a high rate of utilisation of energy inputs (the energy intensity of GDP creation will fall from 1.212 to 0.454 MJ/CZK, i.e. to 37% of its present figure. This development will fully comply with the priorities of the SEP and all its indicative targets will be fulfilled.

All energy sector quality parameters will improve significantly, the utilisation of energy consumed for GDP generation will increase as well as energy savings and energy management. Both these factors will represent a significant contribution to the positive development of energy intensity for GDP creation and for approaching EU country parameters more quickly.

Environmental burdening will be reduced. The Czech Republic will meet all its obligations resulting from international treaties in the sphere of energy sector and the environment.

With only a minimum increase in consumption of primary energy sources (0.2% annually over 30 years) their structure will continue changing. The consumption and mining of brown coal will drop in the period in question by 40% compared to 2000. The measures aimed at increasing the availability of brown coal, i.e. mining exceeding the existing mining limits after their reasonable revision, will be actively used for the renewal of outdated power stations and brown coal will be the most important primary source of energy throughout the period. Brown coal will mainly be used to generate electricity in clean coal technologies.

By 2030 the black coal market will be reduced by more than 40%, but imported black coal will play a more important role and its share on the domestic market will be approx. 55% at the end of the period. All coke consumption will be covered by imports.

The consumption of crude oil should drop by half. The consumption of liquid fuel will increase slowly.

The significance of natural gas in the structure of primary sources will increase and its consumption should increase by a fifth by 2030 while the consumption of nuclear fuel should be two-and-a-half times its level in 2000. In particular, the consumption of renewable sources should increase by a factor of 6.4. The diversification of the consumption of primary energy sources will be further increased as a consequence of these changes.

The consumption of electricity will grow but the growth rate will fall gradually. The average annual growth of electricity consumption in the period 2030/2000 will amount to 1.3%. The electricity system will have an export characteristic throughout the first decade, which will finish after 2010. Imports of electricity should cover shortages of installed capacity at around the culmination point of power stations renewal around 2020. Between 2020 and 2025 the generation of the first new nuclear unit (600 MW) should start while the operation of another new unit should start between 2025 and 2030, complemented by a slight increase in electricity generated from natural gas. After 2025 nuclear energy will become the most important technology for electricity generation. The generation of electricity from renewable sources will grow significantly and the Czech Republic will not have any problems in meeting the national indicative target.

The renewal of power stations will start after 2010. By 2030 most of the generation capacity from brown coal as well as black coal power stations and natural gas sources will have been replaced completely. New nuclear units should result in an increase of 1,200 MW, the capacity of natural gas power stations should also increase while the existing amount of electricity system installed capacity will be maintained.

Imports of energy sources will exceed exports to a greater and greater extent. At the end of the period (2030) the highest imports will be of nuclear fuel (35%), natural gas (34%), liquid fuel (14.5%) and black coal and coke (9% of the total imports of energy sources). Full dependence - natural gas, oil, nuclear fuel; high dependence – black coal (55%). The Czech Republic's energy import dependence will almost double.

#### 4.10 Fulfilment of priorities and indicative targets of the SEP

*The calculated outputs of the “Green Scenario – U” show that the visions, priority goals and indicators of the SEP will be fulfilled as follows:*

- a) The average yearly rate of decline of the energy intensity of GDP creation will be 2.77% in the first period until 2005 and 3.22% over the whole period of the outlook.
- b) The average yearly rate of decline of the energy intensity of GDP creation will be 2.42% in the first period until 2005 and 2.35% over the whole period of the outlook
- c) The energy import dependency will grow to 41.2% in 2005, to 42.5% in 2010 and to 57.8% in 2030.
- d) The national indicative target of the share of electricity generation from renewable energy sources will be met in 2010 or slightly exceeded.
- e) The share of renewable energy sources in the domestic consumption of primary sources will be 5.4% in 2005 and it will grow to 15.7% in 2030.
- f) The binding emission limits will not be exceeded in 2010. CO<sub>2</sub> emissions will decline from 126 to 89 million tonnes/year over the 30 years (by almost 30%), NO<sub>x</sub> emissions from 397 to 265 thousand tonnes/year (a fall of 33%) and SO<sub>2</sub> emissions from 264 to 159 thousand tonnes/year (a fall of nearly 40%).

*A summary of the structure of consumption of primary energy sources and generation of electricity in accordance with the Scenario*

Share in the consumption of energy sources. Situation in 2000		2005	2030
Solid fuel:	52.4%	42.5%	30.5%
- brown coal	36.6%	29.3%	20.8%
- black coal	15.8%	13.2%	9.7%
Gas fuel:	18.9%	21.6%	20.6%
Liquid fuel:	18.6%	15.7%	11.9%
Nuclear fuel:	8.9%	16.5%	20.9%
Renewable sources:	2.6%	5.4%	15.7%

Share in generation of electricity		Situation in 2000	2005	2030
Solid fuel:		70.5%	55.5%	36.8%
- brown coal		58.4%	48.9%	31.9%
- black coal		12.1%	6.6%	4.9%
Gas fuel:		6.4%	4.7%	7.2%
Liquid fuel:		2.2%	1.1%	0.4%
Nuclear fuel:		18.4%	33.3%	38.6%
Renewable sources:		2.3%	5.3%	16.9%